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Country Study

EXPANDING DECENT EMPLOYMENT IN KENYA: THE ROLE OF MONETARY POLICY, INFLATION CONTROL, AND THE EXCHANGE RATE

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Robert Pollin
James Heintz
Department of Economics and Political Economy
Research Institute, University of Massachusetts-Amherst

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**United Nations Development Programme
International Poverty Centre**

International Poverty Centre
SBS – Ed. BNDES, 10º andar
70076 900 Brasília DF
Brazil

povertycentre@undp-povertycentre.org
www.undp-povertycentre.org
Telephone +55 61 2105 5000
Fax +55 61 2105 5001

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COUNTRY STUDY PUBLISHED BY THE INTERNATIONAL POVERTY CENTRE

EXPANDING DECENT EMPLOYMENT IN KENYA: THE ROLE OF MONETARY POLICY, INFLATION CONTROL, AND THE EXCHANGE RATE*

Robert Pollin^{**} and James Heintz^{**}

This IPC Country Study is part of a larger forthcoming study, *An Employment-Targeted Economic Program for Kenya*, which examines a wide range of policy measures for promoting the dramatic expansion of decent employment opportunities in Kenya. This Country Study examines three policy areas related to monetary policies in Kenya: (1) inflation dynamics and the relationship between inflation and long-run growth; (2) monetary policy targets and instruments; and (3) exchange rate dynamics and the country's external balance. The Study concludes with five main policy recommendations: 1) Use the core short-term real interest rate as an intermediate monetary target as opposed to monetary aggregates; 2) Remove the anti-growth bias that frequently operates in the conduct of monetary policy; 3) Diversify the toolkit for addressing inflation by addressing in a focused way the distinct sources of supply-shock and inertial inflation; 4) Maintain a competitive exchange rate through pursuing a crawling peg regime; and 5) Introduce new policy tools for channeling credit to employment expansion, poverty reduction, and improving the balance of payments.

* We want to thank Terry McKinley, Acting Director of the International Poverty Centre, for serving as a peer reviewer of this Country Study and providing extensive substantive input. This Study is a part of a larger forthcoming study, 'An Employment-Targeted Economic Program for Kenya', which has received extensive input from Kenyan colleagues. See endnote 1.

** Department of Economics and Political Economy Research Institute (PERI) University of Massachusetts-Amherst.

1 INTRODUCTION¹

This Country Study is part of a larger study, *An Employment-Targeted Economic Program for Kenya*, currently being completed. The larger study examines a wide range of policy measures for promoting the dramatic expansion of decent employment opportunities in Kenya. As we use the term, decent employment means a work situation that enables a person to at least maintain him/herself and his/her family above a reasonable poverty line.

The government of Kenya has committed itself to generating 500,000 new jobs per year at least through 2007. We certainly embrace this goal. At the same time, there are wide disparities in the types of employment opportunities available in Kenya. A high proportion of people working full time at jobs are still unable to support themselves and their families above a poverty-line level. This is why it is crucial to not simply focus on employment alone, but the quality of employment.

In this working paper, we focus on three interrelated aspects of the broader policy approach—i.e. monetary policy, inflation control, and the exchange rate. In particular, we examine here the current monetary policy regime and evaluate the extent to which it is able to promote sustainable economic development that significantly expands decent employment opportunities. In the context of this overarching objective of promoting decent employment, government policymakers will also need to maintain a commitment to controlling inflation and the balance of payments. But establishing the appropriate mix of policies for expanding decent employment while also managing inflation and the balance of payments is a major challenge for policymakers in Kenya, as it is elsewhere in the world.

In discussing how Kenyan policymakers can meet these challenges, we address three policy areas in detail: (1) inflation dynamics in Kenya and the relationship between inflation and long-run growth; (2) monetary policy targets and instruments; and (3) exchange rate dynamics and the country's external balance. We will also briefly consider the relationship between these topics and the areas of fiscal policy and credit allocation policies. We explore these latter two topics in much greater depth in our forthcoming full study.

We begin the paper by outlining the policy challenges in the areas of monetary policy, inflation, and the exchange rate. We then present some basic data on the Kenyan economy that are relevant to the consideration of monetary policy. We then move to discussing the main focus of the paper, the detailed analyses of current policies. The paper concludes with a discussion of policy recommendations based on the detailed analyses within each section of the paper.

2 OVERALL POLICY CONTEXT

Kenya's current national development strategy, the *Economic Recovery Strategy for Wealth and Employment Creation*, the ERS (2003), states the government's objectives in the area of monetary policy as follows:

The main focus of monetary policy is to ensure that growth in money supply is consistent with economic growth, employment creation and a viable balance of payments position without putting undue pressure on inflation. In the last five years, monetary policy aimed at maintaining low stable inflation while providing adequate liquidity to enable the country to achieve its development needs.

To a large extent the pursuit of low stable inflation was achieved. As a result, the shilling exchange rate, which since 1993 has been market determined, has been fairly stable particularly in the last two years. Although interest rates remain a source of concern, considerable progress has been made in lowering them in line with reduced inflation (p. 4).

For the coming years, the *Economic Recovery Strategy* states that its focus will be on four goals:

- Contain inflation to below 5.0 percent;
- Maintain a competitive exchange rate consistent with an export-driven economic recovery;
- Maintain an interest rate structure that promotes financial savings and ensures efficient allocation of the same; and
- Ensure adequate growth in credit to the private sector

There is no doubt that these are all important goals that are worthy in their own right. At the same time, this list raises a set of serious concerns that require careful attention.

1. Containing inflation below 5.0 percent could operate as a significant obstacle to promoting economic growth, employment expansion, and poverty reduction.
2. Maintaining a competitive exchange rate and promoting export growth is highly desirable. However, it is unclear how, under the current policy regime, the government can insure that the exchange rate remains at a competitive level. Moreover, the economy of Kenya at present is heavily dependent on imports in the areas of energy products, chemicals, equipment, and machinery. Thus, the goal of promoting exports must be advanced within the framework of also reducing import-dependency in these areas.
3. Promoting an efficient allocation of financial savings and ensuring an adequate growth in credit to the private sector are crucial to the country's growth prospects. But it is not likely that monetary policy by itself can reconcile these two goals, especially in the context of also attempting to maintain inflation below 5.0 percent. Other policy interventions will be needed to encourage an efficient allocation of credit to the private sector.
4. The need for an effective combination of monetary and credit allocation policies to support private sector investment becomes even more important in the context of the Kenyan economy's parallel need to promote public investment. In our full study, we argue for a substantial increase in public infrastructure investments for improving the country's road system and water supply. We identify these initiatives as key components of an overall program for employment expansion and poverty reduction. The level of expenditures that we propose is on the order of ksh 40 billion per year beyond what the government has

projected on an annual basis through 2008/09 (Physical Infrastructure Sector MTEF Report (2006) and Medium-Term Budget Strategy Paper (2006)). In our full study, we describe the necessary measures to finance these public investment expenditures. At the same time, for any such long-term public investment initiatives to be viable, it will be necessary for monetary and fiscal policy to operate in a coordinated, mutually supportive fashion.

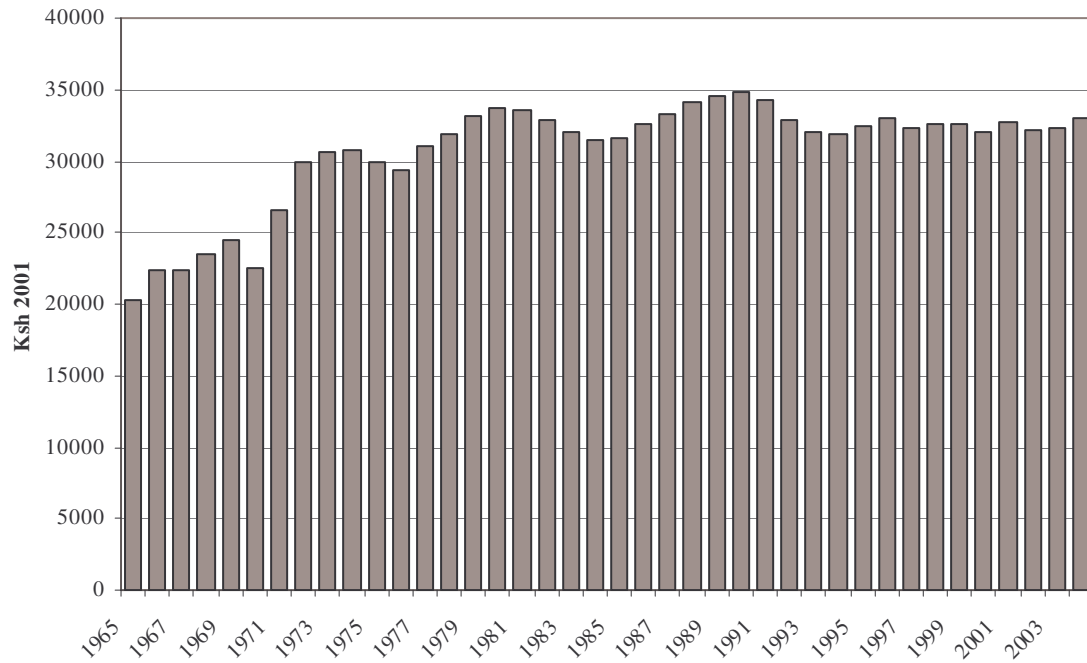
As we will discuss at greater length, the primary monetary policy tool that the Central Bank of Kenya uses to achieve its goals is to target the growth rate of the aggregate money supply, or M3. The Central Bank allows the exchange rate to float and does not attempt to influence the value of the shilling by intervening in the foreign exchange market. The Central Bank will only intervene in the foreign exchange market in special circumstances – for example, if the level of foreign exchange is inadequate to meet external payment obligations. However, the reliance on a single policy target – the growth rate of the money supply – will likely be inadequate to achieve the multiple goals of monetary policy stated in the national development strategy.

3 A BRIEF OVERVIEW OF THE KENYAN ECONOMY

Kenya's economic performance has been poor since the early 1980s, after having been generally positive in the first 15 years or so since the country became independent in 1964. In Figure 1, we see the movements in the level of per capita income from 1965 to 2004. As the figure shows, per capita income rose fairly steadily from the initial years after independence, when average income was about Ksh 20,000 per person (measured in constant 2001 shillings) to 1982, when average incomes had risen to about 33,000 Ksh, a 65 percent gain in average incomes. However, since the early 1980s, average incomes have effectively stopped growing. As of 2004, the average income was roughly at the 1982 level, despite some mild fluctuations – modest increases met by comparable declines in income – over this 23 year period.

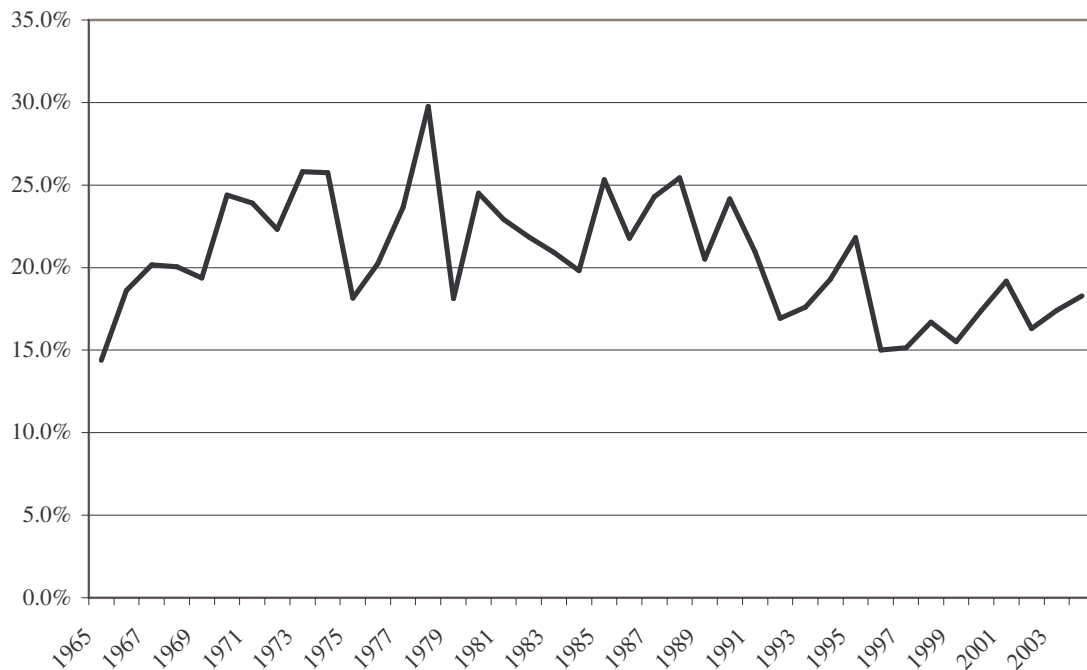
Corresponding with this stagnation of average incomes has been the decline in public and private investment over this same period. We see this in Figure 2. At independence, overall investment amounted to only 14.4 percent of GDP in Kenya. This figure then rises sharply for the next 14 years, to a peak of nearly 30 percent in 1978. However, investment then began its long descent through the 1980s and 1990s, reaching as low as 15.0 percent in 1996. As of 2004, there were some small gains, with the figure at 18.3 percent. Nevertheless, investment over the recent period remained at roughly the low level that had prevailed at the time the country became independent.

FIGURE 1

Real Per Capita GDP, Kenya 1965-2004 (2001 Kenya shillings)

Source: World Development Indicators 2006, World Bank.

FIGURE 2

Gross Investment as a percentage of GDP, Kenya, 1965-2004

Source: World Development Indicators 2006, World Bank.

For the vast majority of Kenyans, employment provides the primary source of income, and thus our focus on targeting the expansion of decent employment as a fundamental policy aim. Table 1 presents a snapshot of the labor force in Kenya, based on data from the most recent 1998-99 comprehensive Labor Force Survey. Of course, there have been significant changes in the Kenyan economy in the years since the last Labor Force Survey was completed. Nevertheless, we believe that these figures provide a reasonably accurate general picture of the structure of employment in the country at present.

TABLE 1

Characteristics of the Labor Force and Employment in Kenya

Millions	
Population	28.8 million (1999)
	33.8 million (2005)
Labor Force (15-64)	12.4 million (1999)
Total Employment	10.5 million (1999)
Percent	
Labor force participation rate	79.0%
Open unemployment rate	14.5%
Formal employment as % of total employment	27.0%
Urban informal employment as % of total employment	34.0%
Rural traditional employment as % of total employment	39.0%

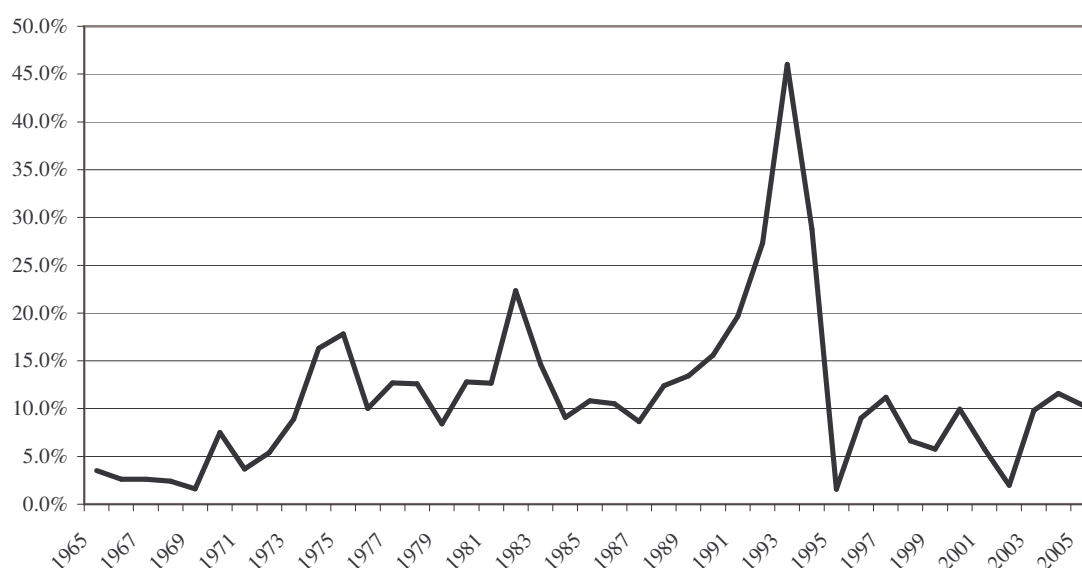
Source: Authors' calculations based on 1998/9 Labor Force Survey.

As we see from Table 1, the open unemployment rate in 1998-99 stood at 14.5 percent. We can divide the total number of jobs in the Kenyan economy into three broad categories—formal employment, urban informal employment, and rural traditional employment. The bulk of employment in the country – 73 percent – could be classified as urban informal and traditional rural. Only 27 percent of the employed had formal jobs.

With these figures in mind, the broad dual aims of our project are 1) to expand the proportion of decent job opportunities in the formal sector; and 2) improve productivity and conditions more generally for those still in the informal and traditional rural sectors as the process of expanding formal employment proceeds.

One of the current objectives of monetary policy is to maintain low rates of inflation. Figure 3 charts the movement in Kenya's consumer price inflation from 1965 to 2005. As we can see from the figure, the Kenyan economy has never been a high-inflation economy, in the sense that Kenya has never experienced a protracted hyper-inflation. In fact, the inflation rate has rarely risen above 20 percent. This certainly is a strong overall performance relative to other developing countries throughout the world. The one exception to this positive experience in Kenya occurred in the early 1990s, when inflation rates soared to approximately 45 percent. This bout of high inflation corresponded to a devaluation of the shilling associated with the implementation of a series of measures to liberalize aspects of the economy, including the financial sector, exchange rates, and trade.

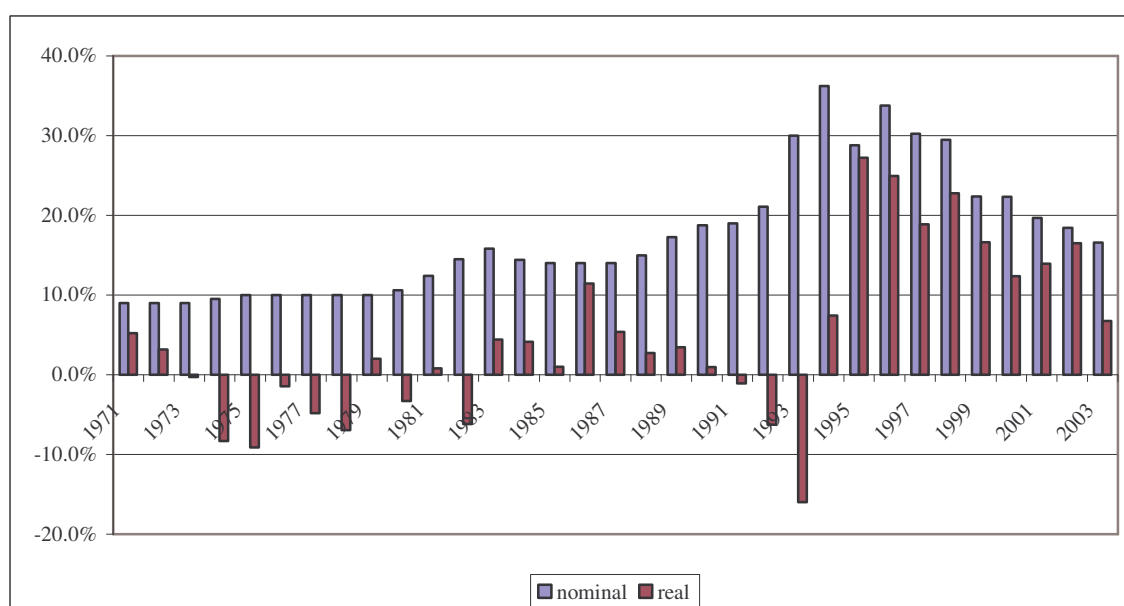
FIGURE 3

Consumer price inflation rates, Kenya, 1965-2005

Source: Central Bureau of Statistics.

One consequence of the financial liberalization policies that were introduced in the first half of the 1990s has been a notable increase in real interest rates. Figure 4 shows nominal and real lending rates in Kenya from 1971 to 2003. As the figure reveals, real interest rates increased significantly beginning in 1995. Real interest rates have fallen modestly since the second half of the 1990s. Nevertheless, real lending rates remain high. The structure of these high real interest rates and their implications will be discussed in much greater detail in later sections of this paper.

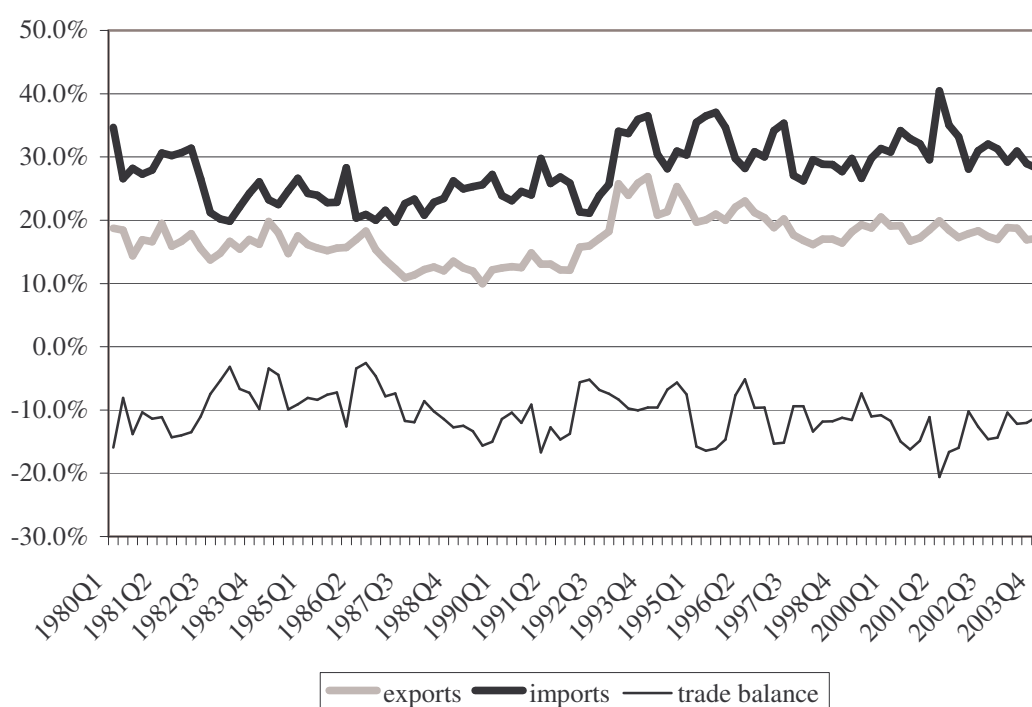
FIGURE 4

Nominal and real lending rates, 1971-2003

Source: International Financial Statistics, IMF.

Kenya also has a problem with a persistent structural trade deficit which has implications for the country's balance of payments and macroeconomic stability. Figure 5 shows trends in exports, imports, and the trade balance as a percentage of GDP. Exports increased as a percent of GDP in the early 1990s, partially as a result of trade reforms that removed policies that discouraged production for export, including the biased allocation of scarce foreign exchange necessary to import critical inputs. However, imports increased along with exports and the trade deficit increased on average. The worsening trade deficit raises the concern that the exchange rate may be misaligned, encouraging imports and limiting export growth.

FIGURE 5

Trade Patterns, Kenya (imports and exports as % of GDP)

Source: International Financial Statistics, IMF.

This brief overview of the economic situation in Kenya highlights a number of issues that are relevant for our analysis of monetary and exchange rate policy. Perhaps the most problematic legacy that the current economy has inherited is an extremely poor record of growth since the 1980s. Clearly, monetary policy must create an environment favorable to increasing productive investment and boosting per capita income growth. If such growth is to be equitably distributed, it must be associated with either an increase in formal employment or an improvement in the employment conditions of informal and rural workers. Inflation, although important, has never been excessive in Kenya. Monetary policy must also focus on the emergence of high real interest rates and the persistence of structural trade imbalances that could slow growth and lead to serious balance of payments problems in the future. The remainder of this paper examines these policy areas in detail.

4 INFLATION CONTROL AND ECONOMIC GROWTH

The government of Kenya has stated strongly its commitment to attacking the country's severe problems of poverty and unemployment. They are also concerned with addressing the problem of *underemployment*, what we have termed a lack of "decent employment" even among those that do presently have jobs. At the same time, as the *Economic Recovery Strategy* emphasizes, the government is also committed to maintaining a low-inflation environment. Clearly, the government holds to the idea that maintaining a low-inflation environment is a necessary foundation for attacking poverty, unemployment and underemployment in a sustainable way.

High inflation is not a desirable end in itself. Given the choice between high inflation and strong economic growth or low inflation and equally robust growth, policymakers should opt for low inflation. However, it is important to examine the premise that low inflation rates are, by themselves, conducive to economic growth. More specifically, we want to consider here what the effect is likely to be of allowing the Kenyan economy to operate at a target inflation rate above its current 5 percent target. Of course, the only reason for relaxing this target inflation rate is that faster economic growth may occur in correspondence with a somewhat higher inflation rate. This would be because tight monetary policies generally will lead to high interest rates. High interest rates, in turn, dampen economic growth, and thereby, the expansion of decent employment opportunities in the formal sector.

In this section on inflation control, we will first review some relevant literature on the relationship between inflation and growth. We will then consider the evidence in Kenya that relates the effects of supply shocks—in particular large spikes in the prices of energy, food and transportation—on overall inflation in the country. We finally discuss alternatives to tight monetary policy as an approach to inflation control.

WHAT IS THE RELATIONSHIP BETWEEN INFLATION AND GROWTH?

Answers to this question vary widely in the professional literature. Some of the most influential recent studies were those produced by the late Michael Bruno, along with his colleague William Easterly. Bruno had been Chief Economist at the World Bank at the time he conducted his studies.

In his 1995 research, Bruno studied the relationship between inflation and economic growth for 127 countries between 1960 and 1992. Bruno found that the average growth rates fell only slightly as inflation rates moved up to 20 – 25 percent. Of particular importance, Bruno found that during 1960 – 72, economic growth on average increased as inflation rose, from negative or low rates to the 15 – 20 percent range. This is because, as Bruno explained, "in the 1950s and 1960s, low-to-moderate inflation went hand in hand with very rapid growth because of investment demand pressures in an expanding economy," (1995, p. 35). Thus, according to Bruno's findings, inflation that results directly from expansionary economic policies will not create any significant barriers to further growth.

Bruno's 1995 findings were challenged by other researchers, who did indeed find that inflation leads to lower economic growth. However, in responding to these critics, Bruno and Easterly (1998) found that the clear negative relationship between inflation and growth only operates at very high inflation rates—what they define as in the range of 40 percent or above. Once these experiences of very high inflation are considered separately from those of

moderate inflation, Bruno and Easterly again found that, for the moderate inflation cases, no clear relationship existed between inflation and economic growth.

Still again, other researchers have produced findings contradictory to Bruno and Easterly, even after separating out the experiences of high (i.e., 40 percent or more) inflation from moderate inflation. For example, IMF economists Ghosh and Phillips (1998), drawing from a data sample of IMF member countries over 1960-96, found evidence of a negative inflation/growth threshold at 2 ½ percent. But they also acknowledge that thresholds of 5 to 10 percent generate statistical results very similar to their 2 ½ percent threshold.

Their particular conclusions aside, the work of Ghosh and Phillips is within a widely accepted current stream of research that distinguishes the relationship to growth of different levels of inflation—observing how the effects of inflation on growth will vary at, say, 5, 10, 20 and 30 percent inflation rates. These researchers rely on nonlinear econometric estimating techniques to distinguish the growth/inflation effects at these alternative threshold levels. What is also especially relevant for the case of Kenya is that this most recent stream of researchers now also consistently finds that the growth/inflation relationship is different for industrialized countries and developing countries.

For example, a 2001 study by another team of IMF economists, Moshin Khan and Abdelhak Senhadji, identified the threshold point for industrial countries at which inflation reduces economic growth at a very low 1 – 3 percent. But their threshold point for developing countries was 11 – 12 percent. This distinction in threshold points was also found in a 2004 study by Burdekin, Denzau, Keil, Sitthiyot, and Willett. They also utilized non-linear estimating techniques. However, they reached conclusions nearly opposite to Khan and Senhadji: that the negative inflation/growth threshold was higher for industrial countries, at 8 percent, than the threshold for developing countries, which was three percent.

Robert Pollin and Andong Zhu (2006) recently developed another model that estimates the effects of inflation on economic growth. This model includes inflation as one potential factor influencing economic growth, after controlling for a range of other potential influences.² The growth/inflation estimates are based on data from 80 countries from 1961 to 2000. As with the more recent literature generally, the Pollin/Zhu model includes a non-linear component to capture the differential effects on growth of relatively low versus relatively high levels of inflation. In addition, the model follows Bruno and Easterly in excluding inflation episodes in excess of 40 percent. Finally, this model examines the inflation/growth relationship for the full set of countries in different ways. It provides separate sets of results for OECD countries, middle-income countries, and low-income countries. It also considers the full sample of countries within four separate decades from 1961 to 2000. This study then utilizes four different estimating techniques with each of the various country- and time-period groupings, to test for the robustness of findings using any given technique.

The main results of these exercises can be summarized quickly. Considering the full data set, they consistently find that higher inflation is associated with moderate gains in GDP growth up to a roughly 15 – 18 percent inflation threshold. But the results do diverge when they divide the full data set according to income levels. With the OECD countries, no clear pattern emerges in terms of identifying a negative inflation/growth threshold. With the middle income countries, including South Africa as the one sub-Saharan African country in this grouping, the results again become consistently positive between inflation and growth up to a 14 – 16 percent threshold, though these results are not statistically significant.

The positive inflation/growth relationship holds more strongly and consistently with low-income countries, including Kenya as one of 18 Sub-Saharan African low-income countries in this grouping. With the groupings by decades, the results indicate that inflation and growth will be more positively correlated to the degree that macroeconomic policy is focused on stimulating demand; this is a finding consistent with Bruno's observation that growth and inflation were more positively correlated over 1960-72, when active demand management policies were being widely practiced in support of maintaining high employment.

In short, the results from Pollin and Zhu's model are broadly consistent with Bruno's earlier World Bank studies, despite substantial differences between methodological approaches. That is, there is no statistically robust evidence in the Pollin/Zhu model suggesting that moderate inflation, in the range of less than 20 percent, will have a negative influence on economic growth. Rather, there was some evidence to support the view that such moderate inflation is associated positively with growth.

Considering the findings from all the studies in addition to our own, nothing close to a consensus has been reached on this question, even while increasingly sophisticated estimating techniques have been deployed to control for various non-linearities in the inflation/economic growth relationship. At the same time, a few basic conclusions from these various studies that are relevant for the Kenyan case do seem warranted. A first basic conclusion is that regardless as to whether researchers observe a negative growth/inflation relationship emerging in the low or high double-digit range for developing countries, only one study found a clear negative relationship between growth and single-digit inflation specifically for developing countries. This suggests that for Kenya, setting an inflation target below five percent is not likely to offer benefits in terms of the economy's growth performance. If Kenya chooses to follow the low-end finding within the professional literature on the inflation/growth trade-off, that would still suggest an inflation target in the range of 8- 9 percent.

A second basic conclusion is that, despite the wide range of techniques now being used to estimate the growth/inflation trade-off, no researcher has challenged one important point emphasized by Bruno in his initial 1995 work—namely, that the relationship between inflation and growth will be different depending on what is causing the economy's inflationary pressures. As Bruno found, demand-pull inflation, resulting from a process of economic expansion, will be positively associated with growth as long as the inflation rate remains moderate. Thus, if Kenya pursues an aggressive jobs program, one would expect that the inflationary pressures that may then emerge would not be harmful to growth, as long as, again, the inflation remains moderate.

By contrast, following the logic of Bruno's findings, inflation that results from excessive price mark-ups over costs by businesses, supply shocks, or exchange rate volatility will be associated with negative growth effects. But these negative growth effects will not be due to the inflation per se, but rather to the monopolistic pricing power of businesses or from the economy's attempt at adjusting to the effects of supply shocks or volatile movements of the shilling.

SUPPLY SHOCKS AND KENYAN INFLATION CONTROL

We have already shown that the Kenyan economy has never been a high-inflation economy (Figure 3). In fact, according to the research we have just reviewed, the inflation rate in Kenya has been in the range consistent with strong, stable economic performance during most of the post-independence period.

Despite Kenya's overall positive performance with inflation control, it is still the case that supply-side shocks have a major impact on inflationary dynamics in Kenya. As one important example, food price inflation, due to droughts or other breakdowns in the country's food production, raises the country's overall inflation rate and lowers living standards, particularly of poorer households. Rapid increases in global oil prices have similar effects on the Kenyan economy. Tightening monetary policy in response to such events in order to maintain low inflation rates runs the risks of worsening the economic impact of these shocks.³ Therefore, it is important to understand the impact of exogenous price shocks on inflation dynamics in Kenya and to design policies that may mitigate the impact of these shocks without resorting to macroeconomic tightening.

One way of exploring the impact of exogenous price shocks on inflationary dynamics is to analyze the relationships that exist between the different components of the CPI. Table 2 lists the various components of the Kenyan CPI and describes the goods and services included under the different categories.⁴ The table also shows the relative weights assigned to each broad category of the CPI, with the categories listed in order of their relative rankings. As we see, food prices are by far the most significant component of the overall CPI, with a weight of 50.5 percent of the overall CPI basket. Housing and clothing are the next most significant components of the overall CPI, with weights of 11.7 and 9.0 percent respectively. Thus, in combination, food, housing, and clothing comprise over 70 percent of Kenya's overall CPI.

TABLE 2

Components of Kenya's New Broad Category Consumer Price Index

Components	Relative Weight in	
	Overall CPI (percentages)	Examples of Goods and Services Included
(1) Food	50.5	Grains, fruits, vegetables, meat, non-alcoholic drinks, meals away from home
(2) Housing	11.7	Rented houses, rented flats, land rates
(3) Clothing and footwear	9.0	Men's, women's and children's clothes, school uniforms, nappies, material costs for home production, shoes, shoe repair
(4) Education & recreation	6.0	School fees, college fees, textbooks, radios, televisions, cinema, newspapers
(5) Household goods & services	5.8	Furniture, appliances, utensils, cleaning supplies, candles, bedding
(6) Transportation & communication	5.7	Petrol, diesel, car service, insurance, taxi fare, bus fares, matatu fares, postage, phone calls
(7) Energy (Fuel and Power)	4.2	Electricity, water, paraffin, cooking gas, charcoal
(8) Alcohol and tobacco	3.0	Cigarettes, beer, traditional liqueur, miraa
(9) Personal goods and services	2.4	Soap, haircut, toothpaste, watch, umbrella
(10) Medical goods & services	1.6	Pain killers, anti-malaria tablets, bandages, dental services, consultation fees

Source: The New Kenya Consumer Price Index Users' Guide, Central Bureau of Statistics, Ministry of Finance and Planning, Nairobi, January 2002.

Policymakers in Kenya, as elsewhere, sometimes make a distinction between "headline inflation," the rate of increase of the overall CPI, and "core inflation," the rate of increase of the CPI excluding food and energy components. This distinction is not generally illuminating in

the Kenya setting. This is first of all because, as we have just seen, food prices alone account for more than half of the overall CPI. The figure is even higher, at 56 percent, for lower income households in Nairobi.

With respect to energy prices, the primary source of supply-shock inflation in Kenya, as elsewhere, is spikes in the global price of oil. These spikes in global oil prices are reflected in two components of Kenya's CPI that we see in Table 2:

1. *Transportation and Communication* (5.7 percent of overall CPI), including petrol, diesel, car service, insurance, taxi fare, bus fares, matatu fares, postage, and phone calls; and
2. *Energy (Fuel and Power)* (4.2 percent of overall CPI), including electricity, water, paraffin, cooking gas, and charcoal.

In addition, the prices of both "Transportation and Communication" and "Energy" feed into other costs of doing business, and thereby affect the other components of the CPI indirectly. It is therefore unclear whether any measure of "core inflation" can actually remove the effects of spikes in the prices of food and foreign oil.

To understand more clearly how food and oil price shocks affect the overall CPI in Kenya, we estimated a vector autoregression (VAR) model that includes the 10 components of the Kenyan CPI as variables. The data consist of monthly estimates of the revised CPI series from January 1991 to December 2005. We present a technical summary of the model in Appendix 1. Here we offer a brief non-technical summary of the principal findings of the exercise, focusing on the effects throughout the economy of shocks in the prices of three components of the Kenyan CPI—"Food", "Transportation and Communication", and "Energy." We focus on both the "Transportation and Communication" and "Energy" components of the Kenyan CPI, since, as we have discussed above, they are the two categories within the CPI through which foreign oil price shocks get transmitted throughout the Kenyan economy.

Food price shocks. The results of our VAR model show that food price shocks appear to have few systematic effects on inflation rates in the rest of the economy. Even within the food sector itself, the cumulative impact of the shock on food price inflation dwindles significantly after two years. The only other sector that shows any significant response to an exogenous increase in food prices is the transportation sector. In other words, food price shocks appear to be fairly transitory with little systemic impact on inflationary dynamics in Kenya. This finding is especially relevant given the recent drought, which led to a 44 percent increase in food prices between October 2005 and March 2006. According to our model, we would not expect that this spike in food prices will have any longer-term impact on inflation in Kenya.

Transportation and communication price shocks. Shocks to transportation costs have systemic effects on other prices in the Kenyan economy, even though they constitute only 5.7 percent of the overall CPI. Recall here from Table 2 that the index of transportation and prices includes fares for car services, taxis, buses, and matatus, as well as petrol and diesel prices. As such, this component of the CPI does not simply reflect changes in global oil prices. It will clearly be strongly influenced by oil prices, but it will also include, for example, the labor and material costs associated with each of the various modes of transportation.

From our VAR model, we found that a transportation price shock unleashes inflationary pressures throughout Kenya's economy. Moreover, the effects of the shock also appears to lead to accelerating inflation, even after 2 years, in certain other components of the overall CPI,

including the prices of clothing and services. This finding has significant implications for the issue of overall inflation control. It suggests that lowering transportation costs will contribute to sustainable lower inflation rates overall.

Energy price shocks. According to our model, a one-time energy price shock—including here, again, electricity, water, paraffin, cooking gas, and charcoal prices—does raise the inflation rates of the other CPI components and these higher inflation rates are often sustained over time. This is true even though the energy component constitutes only 4.2 percent of the overall CPI basket. This result confirms the high degree to which energy prices affect business costs, which in turn get passed onto consumers by raising the overall CPI over a sustained period of time.

Overall, the findings from our VAR model suggest the following policy implications:

1. Food price shocks do have a major direct impact on overall “headline” inflation in the short-run. And because food prices constitute over 50 percent of the overall CPI basket, these effects can impose serious hardships, especially for lower-income households. At the same time, these effects are transitory. These two results imply the need for immediate policy interventions to counteract the short-term impact of food price shocks, but that such interventions need not be sustained over longer time periods.

The most effective approach would be for the government to utilize its existing underutilized grain storage facilities throughout the country to provide an effective buffer stock of food that is readily accessible. This buffer stock should of course be accumulated during periods when food prices are relatively low. This buffer stock of food could then be distributed throughout Kenya in response to any period of rapid increases in food prices, regardless of the source of the price increases. It is also the case that by purchasing food for the buffer stocks when prices are low, this policy will serve to set a floor on food prices. Overall, then, the buffer stock system will contribute to food price stability by counteracting both upward and downward price fluctuations.

Note here that precisely because the effects of the food price shocks are transitory on the overall economy, the period of time over which the food reserves would need to be drawn down would be relatively short.

2. Transportation and communication price shocks, are, of course, heavily affected by global oil prices. The most direct channel is through the petrol and diesel price components. But car service, taxi fares, bus fares, and matatu fares will also be affected by an oil shock, though less fully than petrol and diesel prices, since these services also include significant labor and material costs other than oil. It would not be feasible for the Kenyan government to create oil buffer stocks comparable to the food buffer stocks we are proposing as a means of mitigating the effects of food price shocks. This is because Kenya imports all of its oil, and because building an oil buffer stock will likely be far more expensive than what could be developed for a food supply.

At the same time, the Kenyan government could pursue initiatives to directly reduce the price of transportation, both in the short-run, after a global oil price spike has occurred, and in the longer term. In the short term, the most effective means of counteracting the effect of global oil price shocks would be for the government to quickly increase its subsidy for public transportation, including bus and matatu fares. Over the longer term, investments in the country’s transportation infrastructure, especially its roads system, will lower the overall share of transportation costs in the CPI, and thereby mitigate the effects on the overall CPI of a short-term oil price shock.

3. Energy price shocks—including here again, electricity, water, paraffin, cooking gas, and charcoal prices—also have a sustained, systemic impact on inflation in Kenya. As with the Transportation and Communications component of the CPI, the only way that the government can counteract the effects of a global oil price spike would be to subsidize the prices of these components of the CPI in the short-run. This would short-circuit the long-lasting effects of these price increases on the overall CPI.

Overall, the challenge for policymakers in Kenya in this area is therefore to identify how best to provide short-term subsidies in both the “Transportation and Communication” and “Energy” components of the CPI, such that the longer-term effects on overall inflation can be minimized.

ADDITIONAL INFLATION CONTROL TOOLS

As we have seen, the weight of the professional literature suggests that as Kenya continues to advance an aggressive program of employment expansion, it should not weaken the program as long as inflation remains moderate, i.e., basically within a single-digit range. But what happens if inflation accumulates inertial momentum, such that a rise to a 10 percent inflation rate leads to still greater inflationary pressures? This happens most commonly when wage and price increases spiral upward together, as labor and business both try to protect their real incomes from the very inflationary forces to which they themselves are contributing. Should Kenya then revert to stringent growth in the money supply as a means of raising interest rates? In fact, other policy tools are available for their use, through which Kenya could contain inflation within a moderate range, without having to rely on high interest rates as its primary control mechanism.

One useful policy tool to consider is “incomes policies”. Incomes policies have been developed in various specific ways, as we discuss briefly below, but the basic idea is straightforward: that wage and price increases are negotiated on an economy-wide basis between labor and business in the formal economy. Through such negotiations, labor and business agree to restrain wage and price increases. This then serves to break the inertial wage-price spiral. To the extent that such agreements are effective, this will then reduce inertial inflationary pressures in the economy. This will be true as a matter of course, since “inflationary pressures” are, by definition, simply efforts by business to raise prices on the products they sell to consumers.

The experience with various types of incomes policies as applied in developing country settings is usefully described in a 1991 paper, “Moderate Inflation,” by Rudiger Dornbusch and Stanley Fischer.⁵ One case Dornbusch and Fischer consider is the successful effort by South Korea in the early 1980s to move from an environment where inflation had consistently remained in double-digits during 1963-81 to an environment of single-digit inflation thereafter. The primary measure for achieving this, according to Dornbusch and Fischer, was incomes policies. They write:

Wage increases in the government sector were reduced in 1981 and 1982; by convention and with the assistance of jawboning, the private sector followed. In addition, a mass education campaign, undertaken at the end of 1980, “stressed the need for restraining the demand for excessive wage increases and for a higher government purchase price of rice (p. 51—the internal quote is from a paper by Nam 1984).”

In this Korean case, the government was clearly focused on restraining the wages of workers, as opposed to combining wage restraint with price constraints on business. Indeed, as Dornbusch and Fischer note, the Korean government in this same period also agreed to *increase* the price that they would pay for rice while imposing wage restraints on workers. As such, in this case, incomes policies were clearly also a means of redistributing national income away from workers and toward business.

However, it is not necessarily the case that incomes policies need to encourage a regressive redistribution of national income. Thus, Dornbusch and Fischer also describe the disinflationary program pursued in Indonesia in the mid-1970s. In this case, the government imposed fiscal restraints with redistributive fiscal measures favoring the poor. They write that “Sales taxes on luxuries were raised while those on essentials were reduced; imports of rice and fertilizer were heavily subsidized, and it was decided to aim for a budget surplus,” (p. 54). Demand for luxury goods would thereby fall, lowering the prices for luxury goods. Meanwhile the demand for imported necessities, such as rice and fertilizer, was allowed to rise, without producing higher prices, since the government was subsidizing these prices.

Overall, incomes policies represent what Dornbusch and Fischer call a “non-market” tool for restraining inflationary pressures generated by inertia—i.e., by a wage-price spiral. Breaking such inertial inflationary forces entails some combination of restraints on both wages and prices, or some reconfiguration of the government’s budget, as in Indonesia, to effectively achieve a comparable effect on inertial inflationary pressures. With such policies, there will always be an issue of which social classes are restrained to a greater or lesser extent in their efforts to keep up with the wage-price spiral. This is ultimately not a technical matter of economic policy, but rather a question of which groups have more or less political power. At the same time, the ability of an incomes policy to be sustained over time as an effective inflation control tool will depend on representatives of labor and capital achieving at least a minimally workable consensus as to the equitable distribution of wage and price constraints.

In the case of Kenya, there is some precedent for the types of negotiations similar to those needed for operating an effective incomes policy. This is the extensive set of negotiations that take place every year to establish the range of minimum wage rates for different occupations and different regions of the country. However, to date, these negotiations have not seriously taken up the issue of how wage-setting decisions may also be linked to issues of inflation control. But there is no reason why these negotiations might not be expanded to consider incomes policies.

In addition, the establishment of the Productivity Centre of Kenya—which is being done precisely through negotiations between representatives of business, labor, and the government—could offer a forum through which the issue of linking wage growth, productivity growth, and inflation control might be fruitfully explored. That is, the newly forming Productivity Centre could undertake productive discussions around an egalitarian set of incomes policies, with restraints shared equitably by both workers and businesses.

One potential barrier to establishing effective incomes policies in Kenya is the fact that the negotiations we are describing above would primarily occur among only those social groups operating in the formal economy. As we have seen, formal sector employment represents only about 30 percent of total employment in Kenya. However, this should not be a serious barrier to the operations of a workable set of incomes policies. This is because the formal economy produces about 70 percent of Kenya’s total GDP.

5 RETARGETING MONETARY POLICY

As we have seen from the *Economic Recovery Strategy* in Section 2 above, the first objective of monetary policy in Kenya is to maintain low and stable rates of inflation. Currently, the target for core inflation—that is, the inflation rate excluding energy and food costs—is to keep the rate of price increase below five percent per year. As discussed in the previous section, interventions apart from monetary policy can be used to control inflation. However, the current monetary regime in Kenya relies on monetary instruments to meet its inflation target. Therefore, it is important to look into these practices in detail.

Although the Central Bank formulates monetary policy with this ultimate objective of low inflation, the specific intermediate target used in its daily operations is to control the growth rate of the money supply. Specifically, monetary policy targets the growth rate of broad money, defined as M3 (previously called M3X). In Kenya, M3 is composed of currency in circulation outside of the banking sector, demand deposits, savings deposits, Certificates of Deposit (CDs), the deposits of non-bank financial institutions, and the foreign currency deposits of Kenyan residents.⁶

The economic theory behind this operating procedure is the quantity theory of money, with its well-known formula:

$$(\text{money supply growth}) \times (\text{velocity of circulation of money}) = (\text{inflation rate}) \times (\text{real GDP growth})$$

The quantity theory of money holds that the velocity of circulation of money is constant, and that real GDP growth can be taken as given for the purpose of this formula. This therefore means that the growth rate of the money supply should be closely linked to the country's inflation rate. The Central Bank operates with the assumption that its target money supply growth rate should be approximately equal to the country's inflation target plus the expected growth rate of real GDP. As such, in recent years, the target growth rate for broad money has generally ranged between six and 11 percent (Central Bank of Kenya, Annual Reports, 2000-05).

In fact, the Central Bank of Kenya does not directly control the growth rate of its money target, M3. This is true not only for the Kenyan central bank, but for all central banks. The central bank can influence the growth of a more narrow band of financial assets that are called "high-powered money" or "reserve money." Reserve money consists of currency in circulation plus reserves in the banking system. It therefore excludes the other components of M3 as policy targets—i.e., demand deposits, savings deposits, CDs, the deposits of non-bank financial institutions, and the foreign currency deposits of Kenyan residents.

In other words, in practice, the Central Bank establishes a growth rate for reserve money that it decides is consistent with low inflation, with the idea that this reserve money target will in turn lead to a growth rate of M3 that is consistent with low inflation and adequate liquidity to the private sector.

This current operating procedure for the Central Bank of focusing on reserve money targeting differs significantly from that which prevailed prior to financial and monetary liberalization in the late 1980s and early 1990s. Instead of targeting the growth rate of reserve money, with the aim of controlling M3 growth in turn, monetary policy before liberalization involved direct regulatory interventions in credit markets and was closely tied to fiscal policy.

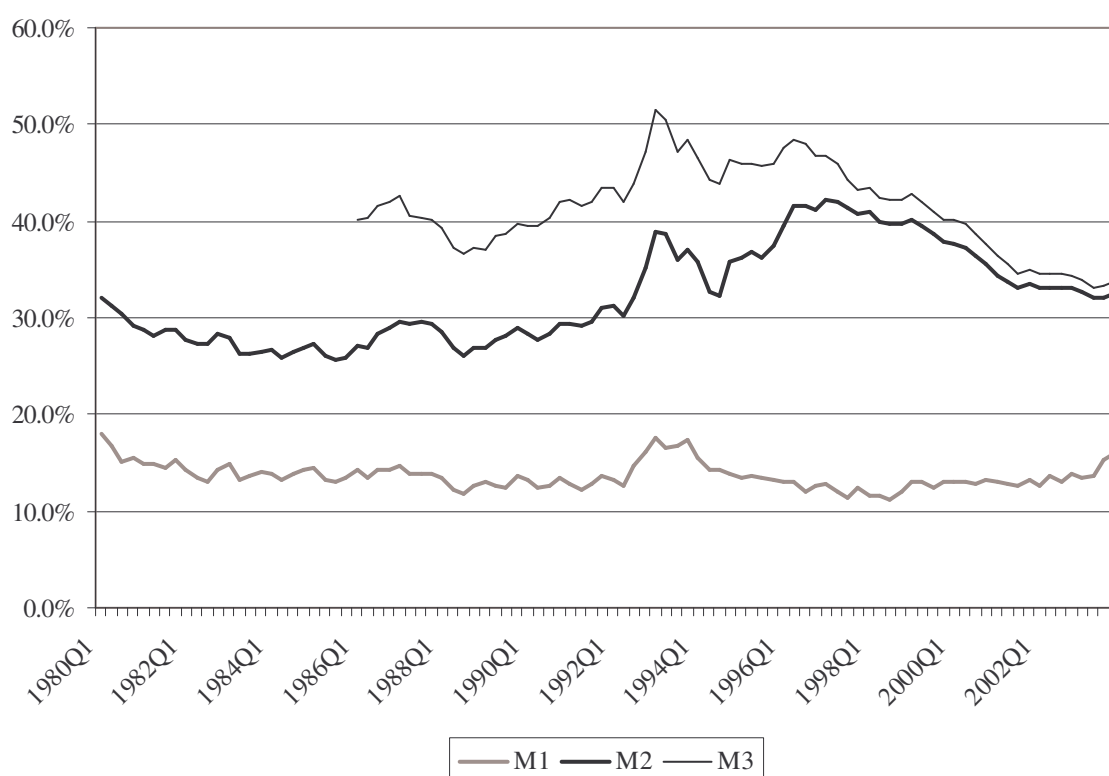
The Central Bank extended credit to the public sector to finance budget deficits. In addition, the government maintained credit controls and administratively determined interest rates. Relatively comprehensive monetary and financial reforms began to be implemented in 1989 and were comprised of numerous components: reduction in direct financing of budget deficits, gradual liberalization of interest rates, harmonizing and strengthening of the regulation of financial institutions, and removal of direct credit controls (Ngugi, 2000). These changes had a significant impact on the banking sector, interest rates, and the conduct of monetary policy.

TRENDS IN MONETARY AGGREGATES

Figure 6 shows trends in the money supply as a percent of GDP from 1980 to 2003.⁷ Measures of broad money (e.g., M2 or M3) increased as a share of GDP on average until the late 1990s, at which time broad money, relative to GDP, began to decline modestly.⁸ The narrowest definition of the money supply, M1, exhibits a different pattern. M1 as a share of GDP remains relatively constant through much of the period illustrated in Figure 6. However, beginning in the late 1990s, M1 rises as a percent of GDP while M2 and M3 decline.

FIGURE 6

Money supply as a percent of GDP, 1980-2003



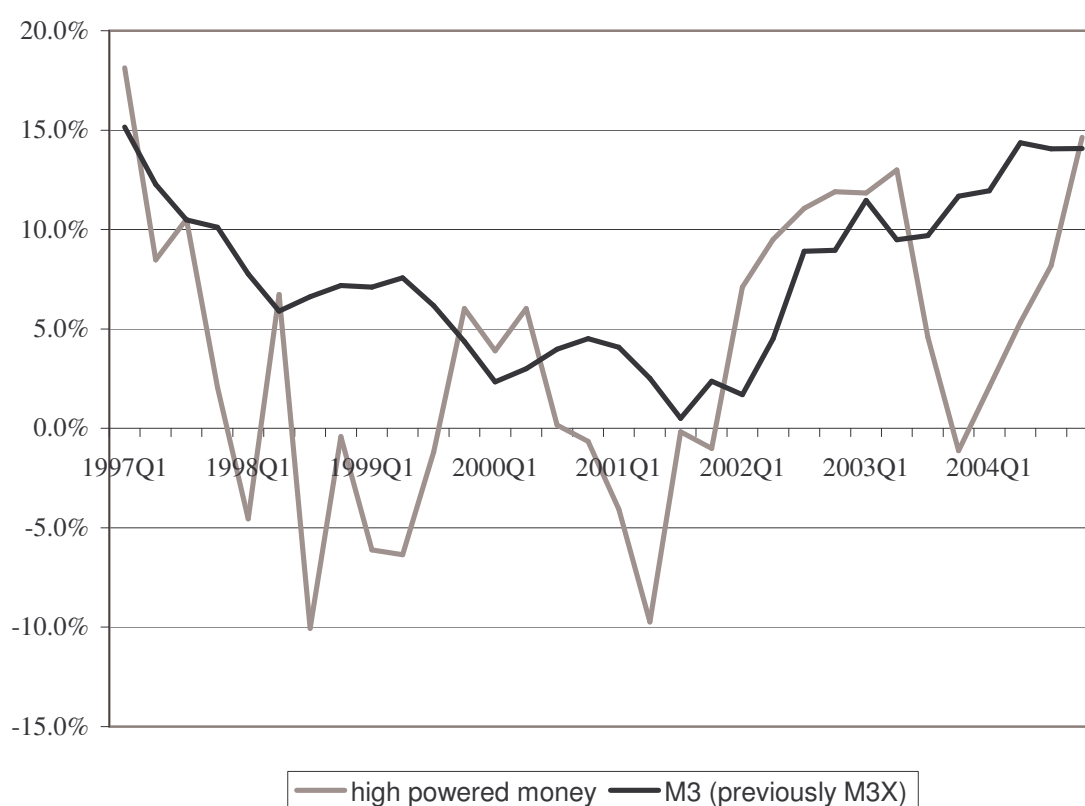
Source: Central Bank of Kenya and International Financial Statistics, IMF.

One possible explanation for the pattern observed since the mid-1990s is that individuals and businesses in Kenya are increasingly moving their financial assets out of the banking system and purchasing non-bank assets – including domestic and foreign stocks, bonds, and

derivatives, as well as real estate. Such asset purchases require additional cash. This would mean that the demand for narrow money would rise while the demand for M2 and M3—such as savings deposits and CDs—would fall. However, if this type of pattern is prevailing, it means that wealth-holders are moving their assets into and out of the banking sector on a regular basis.⁹ Under such circumstances, the Central Bank's control over M3 will diminish. In addition, large amounts of money and financial assets currently circulate in the Kenyan economy outside of the banking sector. The Central Bank has virtually no influence over these resources.

Furthermore, the monetary aggregates in Kenya, like M3, respond to the demand for credit generated by the economy. If the broad money supply responds to changes in credit demand, the Central Bank will not be able to independently determine the growth rate of monetary aggregates by altering the supply of high-powered reserve money. Figure 7 charts the growth rate of M3 and high-powered money in the Kenyan economy from 1997 to 2004. Although the two monetary aggregates move together in terms of general long-run tendencies, broad money (M3) often does not respond directly to changes in the monetary base. This suggests that the Central Bank cannot target monetary aggregates with precision, even if monetary policy may be able to influence to some extent the general rate at which the money supply expands.

FIGURE 7

Growth rate (4 quarter) of high powered money and M3, 1997-2004

Source: Central Bank of Kenya (2005).

INTENSIFYING RATHER THAN DAMPENING CYCLICAL INSTABILITY

The current inflation target and the tools used to achieve this goal, if utilized inflexibly, have the potential to make cyclical instability in the Kenyan economy worse. In other words, under the current policy regime, the Central Bank has a tendency to pursue an expansionary policy when the economy is growing rapidly and, correspondingly, to pursue a tight monetary policy when the economy is contracting or growing slowly.

We see an example of such a bias in monetary policy in the 2002 Annual Report of the Central Bank of Kenya. Real GDP growth was initially expected to be 2.6 percent for the financial year 2001/02. However, economic performance was worse than expected and the GDP growth estimate was revised downward to 1.4 percent (page 12). The Annual Report describes the response of monetary policy as follows:

"In line with these developments, a revised monetary framework, which adopted a tighter monetary policy framework, was designed and implemented ..." (page 12, emphasis added).

The logic behind this kind of intervention follows from the fact that the Central Bank operates according to the quantity theory of money. According to this approach, the Central Bank cannot control the real growth rate of the economy. If real GDP growth is slowing down for other reasons, then the Central Bank needs to also reduce the growth of the money supply. If money supply growth were to exceed the growth of GDP in this situation, the reasoning goes, an acceleration of inflation would ensue.

But there is a serious problem with this approach. Reducing the availability of credit and raising interest rates may discourage economic growth exactly when it would be beneficial for the Central Bank to promote growth through lower interest rates and greater overall access to credit. That is, a tight monetary policy such as that described in the statement above may slow down GDP growth by reducing consumption and investment through increases in the real interest rate. The reduction in liquidity during an economic downturn may worsen growth performance instead of reigning in inflationary pressures.

A similar bias in monetary policy may be introduced by the five percent inflation target. Often, the inflationary pressures that the Kenyan economy faces are triggered by adverse supply-side shocks, such as poor agricultural performance or high fuel and petrol prices. Such supply-side shocks raise inflation, but they also slow economic growth. Tightening monetary policy in response to these shocks introduces a similar anti-growth bias into the conduct of macroeconomic policy.

The Monetary Policy Statement of the Central Bank of Kenya, December 2005, demonstrates the risk of this anti-growth bias. The document states:

It was clear that the threat of rising oil prices and strong expansion in credit to the private sector challenged the Bank in its pursuit of the 5 percent inflation objective. Consequently, the Bank considered it prudent to continue with a tight monetary policy (page 2).

The Monetary Policy Statement does go on to acknowledge that the tight monetary stance was later deemed inappropriate and a revised policy was implemented, due to faster than expected economic growth. Nevertheless, the Statement shows the basic approach at the Central Bank, operating on the basis of the quantity theory of money.

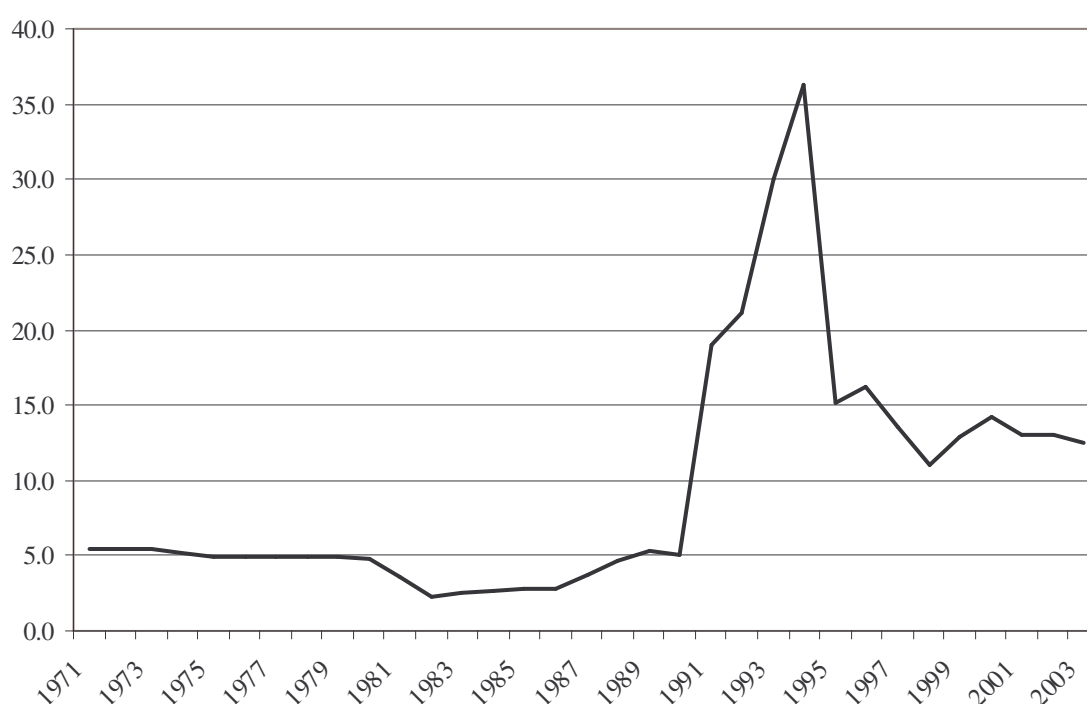
INTEREST RATES

One of the costs of pursuing a tight, low-inflation monetary policy is that real interest rates would rise, reducing investment and consumer spending. In addition, high real interest rates and unrestricted capital mobility could lead to an appreciation of the real exchange rate, which would hurt export performance and encourage import penetration.

We have already examined the broad trends in nominal and real lending rates for Kenya (Figure 4). In addition, the spread between borrowing rates and lending rates has also increased significantly in Kenya following the liberalization of the banking sector and credit markets. Figure 8 charts the trend in the lending/deposit rate spread. The spread increased dramatically at the time of liberalization, spiking in 1994 at 36 percent. However, the spread then diminishes to lower levels. Nevertheless, as of 2003, the spread remained in the range of 13 percent, as the figure shows. More recent data from the Central Bank of Kenya report that the spread has continued to fall, to slightly below nine percent as of mid-2006. This still remains an extremely large spread, despite the clear downward trend since the early 1990s.

FIGURE 8

Spread: lending minus deposit rates, 1971-2003



Source: International Financial Statistics, IMF.

Three key factors explain the widening spread: higher risk premiums following financial liberalization, lack of competition among Kenyan banks, and high transactions costs associated with inefficiencies in the financial sector. The increase in real lending rates and the widening of the spread between lending and deposit rates following financial liberalization are not unique to Kenya. Many other countries in sub-Saharan Africa have experienced similar interest rate developments following similar reform processes (Reinhart and Tokatlidis, 2003). Moreover, financial reform appears to have little impact on saving and investment rates among sub-Saharan African countries (Reinhart and Tokatlidis, 2003). This suggests that financial liberalization, by itself, is an inadequate policy response to address the institutional problems of the financial sectors in many, if not all, African countries (see, for example, Aryeetey 2001, and Nissanke and Aryeetey 1998). In the case of Kenya, without deeper institutional reforms to strengthen the developmental role of banks and other financial institutions, liberalized financial markets will not be able to deliver the predicted benefits of reform. This is a topic we examine at some length in our full study.

Higher real lending rates raise the cost of credit to businesses, reducing investment and curtailing access to working capital. In addition, as indicated by the large quantity of excess reserves in the system, credit rationing is relatively common. Many smaller enterprises, particularly in the agricultural sector and among own-account workers, face credit constraints that limit the potential for productivity-enhancing investments. The lack of productivity improvements keeps earnings low and limits the quality of available employment opportunities.

To our knowledge, there is not solid evidence demonstrating the extent to which high real lending rates inhibit the growth of private investment and consumption. From the range of interviews we conducted with private business representatives, bankers and government officials, the consensus view is that high interest rates are indeed a significant constraint on growth. In any case, we do know which way the direction of effect operates—that is, lowering interest rates will lower the costs of investment for business and will make the purchase of expensive consumer goods more possible for consumers.

The tight monetary policies that the Central Bank has been pursuing will tend to support higher real interest rates. However, it is also important to recognize, as has been stressed above, that the Central Bank has limited influence over monetary aggregates. The Central Bank does have the ability to control overnight lending rates. But there are large and variable spreads between overnight rates, which carry little default and inflation risk, and other, higher-risk, market rates. This limits the effectiveness of the Central Bank's policies of manipulating the overnight rates, since, ultimately, the point of the Central Bank's efforts is not simply to manage the overnight rate but the range of market rates as well. The market rates, of course, are the rates that are faced by businesses and consumers as they make calculations about the affordability of increasing their borrowing to help finance investment and consumption.

It is also important to recognize that the effectiveness of monetary policy and the reform of the financial sector are closely interconnected. The financial sector is the primary conduit through which monetary policy affects real economic outcomes, and monetary policy determines, to some extent, the amount and distribution of resources available to financial institutions. Therefore, monetary policy must be coordinated with financial sector interventions that are directly aimed at promoting more rapid economic growth, employment expansion and poverty reduction.

In our full study, we propose a set of financial-sector interventions that would serve to inject large-scale increases of affordable credit into the Kenyan economy. There are two main components to our proposals:

1. We propose to create a pool of subsidized credit at a level equal to roughly 20 percent of the current level of private investment in Kenya. These funds would be made available to commercial banks. The commercial banks would then be obligated to make loans 1) to finance targeted sectors that would, for example, promote exports and/or reduce imports; and 2) to make significantly increased credit reserves available to SACCOs and other Micro-Finance Institutions (MFIs) that are already well-developed and operating extensively throughout Kenya. The MFIs would then be far more capable of making large amounts of loans to small businesses, informal enterprises, and agricultural small holders; and
2. We propose that guarantees be set at 75 percent of the loans that commercial banks make to the favored sectors and MFIs. We demonstrate that even assuming default rates on these guaranteed loans as high as 30 percent, the total accruals on these government contingent liabilities would amount to no more than ksh 9 billion, i.e., about five percent of the fiscal budget.

In addition to the basic aim of making affordable credit much more available throughout the Kenyan economy, these two policy initiatives would also specifically address the three factors that we mention above as contributing to the worsening interest rate spreads.

1. *Higher risk premiums.* Creating an extensive loan-guarantee program with a 75 percent guarantee obviously lowers the risk to private financial institutions of making loans. The risk is instead assumed by the government.
2. *Lack of competition among Kenyan banks.* The loan guarantee program would be available to all private financial institutions in Kenya. This will create opportunities for smaller commercial banks to build market niches, focusing initially on loans to small businesses and what is now the informal sector.
3. *High transaction costs associated with inefficiencies in the financial sector.* Increasing market competition should, in turn, force financial institutions to operate more efficiently, thereby lowering their transaction costs.

6 EXCHANGE RATE POLICY AND EXTERNAL BALANCE

Kenya has pursued a variety of exchange rate regimes since gaining independence (Ndung'u, 2000; Ndung'u and Ngugi, 1999). From independence until the early 1980s, the shilling was fixed relative to the dollar or Special Drawing Rights (SDRs), the quasi-currency created by the International Monetary Fund as a tool for promoting its global policy management initiatives.¹⁰ Beginning in 1982, the exchange rate regime was shifted to a crawling peg. The crawling peg was in place until 1990, when a dual exchange rate system was implemented. In October 1993, the official exchange rate was merged with the market rate and a floating exchange rate, primarily determined by market forces, was put into place.

In many respects, the overall approach to trade policy mimicked trends with regard to Kenya's exchange rate regimes – that is, moving, from purposeful intervention towards market-based liberalization. In the 1960s and 1970s, Kenya followed what can be characterized as an import-substitution development strategy (Jenkins, 2005; Wagacha, 2003; Bigsten, 2002). In the early post-independence years, the Kenyan government aimed to expand domestic productive activities and to “indigenize” production—i.e., increase the role of Africans in the ownership of enterprises and management of productive activities (Wagacha, 2003; Bigsten, 2002). In the early 1970s, Kenya ran into balance of payments problems. The government intensified efforts at import substitution in order to deal with the shortage of foreign exchange. However, these efforts turned out to be unsustainable.

The import substitution regime was biased against agriculture and production for export (Wagacha, 2003). Meanwhile, Kenya remained highly dependent on imported intermediate inputs and capital goods (Bigsten 2002), a constraint that could not readily be corrected through import-substitution efforts alone, certainly not in the short- to medium-term. The bias against agriculture—which accounted for the majority of employment and economic activity—limited the growth of the domestic market and placed significant constraints on the expansion of productive activity. The bias against exports and the continued dependence on imported inputs meant that the demand for scarce foreign exchange expanded faster than the supply. These twin constraints—the limited domestic market and scarce foreign exchange—eventually crippled the import substitution strategy in Kenya.

In the 1980s, Kenya adopted structural adjustment programs as a conditionality for the country's borrowing from the International Monetary Fund. During this time, there was a move away from the import substitution model towards a model of export oriented growth. However, many protectionist measures remained in place. In addition, the allocation of foreign exchange was largely controlled by the state and its distribution favored particular sectors (Bigsten, 2002). The allocation of foreign exchange was not always supportive of broader developmental objectives such as the diversification of exports or the generation of employment.

In the early 1990s, a policy of broad-based liberalization was adopted, including the liberalization of trade, the financial sector, and foreign exchange markets. In addition, specific export-promoting policies were implemented (e.g., tariff rebates for exporters, export subsidies, and the establishment of export processing zones, or EPZs). The result of the combined policy of liberalization and export-promotion was a notable, once-off increase in the volume of trade, as we have seen in Figure 5. Although trade volumes expanded after liberalization, the structure of trade was not transformed. In particular, the structural trade deficit was not reduced, indicating that imports expanded along with exports.

Research has suggested that the overall effect of the liberalization of trade and exchange rates on employment has been negative (Jenkins, 2005; Manda and Sen, 2004). That is, despite the significant growth in exports following liberalization, the increase in import penetration has offset these gains. Apart from a few significant sectors, horticulture in particular, exports from Kenya are not more labor-intensive on average than import substitutes (Jenkins, 2005). In addition, the quality of employment opportunities may have diminished with liberalization, with the rise of part-time and casual labor jobs as opposed to full-time modern sector opportunities (Jenkins, 2005). The persistence of structural imbalances in the Kenyan economy suggests that liberalization has failed to address significant constraints on economic

performance. Specifically, it raises the possibility that market-determined exchange rates could be misaligned and do not automatically adjust to eliminate external imbalances.

IS THE SHILLING OVERVALUED?

Exchange rate movements affect economic growth, employment, living standards, and the distribution of resources between sectors that trade on global markets (tradables) and those that produce only for domestic consumption (non-tradables). Therefore, appropriate exchange rate policies are critical in designing an economic program that can succeed in promoting economic growth, employment expansion and poverty reduction.

Recent literature suggests that overvalued real exchange rates—that is allowing a country's currency to rise too high in value relative to the currency values of its trading partners—has negatively impacted long-run growth and compromised development in numerous developing economies, including countries in sub-Saharan Africa (Gala and Lucinda, 2006; Frenkel and Taylor, 2005; Ghura and Grennes, 1993; Dollar, 1992; Cottani, Cavallo, and Khan, 1990).¹¹ Maintaining an overvalued exchange rate means that the price of a country's exports is relatively high in global markets. This makes it more difficult for the country to succeed in selling exports. At the same time, an overvalued exchange rate also means that imports become relatively inexpensive. This creates difficulties for domestic producers to compete against importers within their own domestic markets. As such, maintaining a competitive real exchange rate in Kenya may be an important policy tool for raising Kenya's growth performance and employment opportunities.

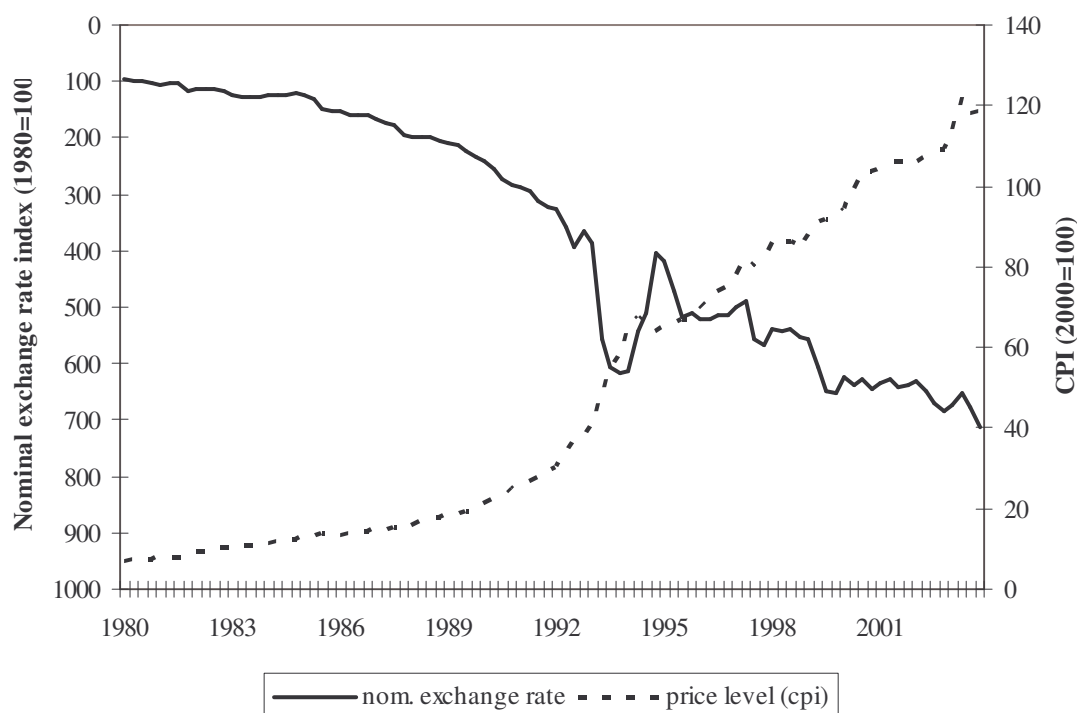
But what does it mean for any given currency, and for the shilling in particular, to be "overvalued?" This is the question we now consider. We have developed a technical econometric analysis of this problem, which we present in Appendix 2. In this main text, we present a brief overview of the principal findings of our technical analysis. The details of the methodology used are explained more fully in Appendix 2.

Figure 9 shows trends in the nominal value of the Kenyan shilling—that is, before adjusting for domestic and international price levels—relative to the currencies of Kenya's largest trading partners.¹² Figure 9 also plots on the same graph movements in Kenya's price level, as measured by the Consumer Price Index (CPI).¹³

As the graph shows, the nominal value of the shilling falls steadily when the domestic price level rises. This is of course what we would expect theoretically. Inflation means that the purchasing power of a currency is diminishing. Therefore, holding everything else equal, the value of the currency will fall relative to other currencies as a result of inflation.

This inverse relationship—the value of the shilling falling as the price level rises—is particularly close in the years prior to 1993. The shilling was fully liberalized in October 1993, that is, it was permitted to float according to market forces (Ndung'u, 2000; Ndung'u and Ngugi, 1999). But before the Central Bank of Kenya floated the shilling, they undertook an initial devaluation. The sharp fall in the value of the shilling, and the corresponding rise in inflation, are both evident in Figure 9. However, after this one-time devaluation, we see that the inverse relationship between the value of the shilling and inflation weakens somewhat. Specifically, the Kenyan CPI begins to rise faster than the value of the shilling falls. Thus, the value of the shilling and inflation in Kenya begin to diverge in the period after the exchange rate was liberalized.¹⁴

FIGURE 9

Nominal Exchange Rate and Aggregate Price Level, Kenya, 1980-2003

Source: International Financial Statistics, IMF.

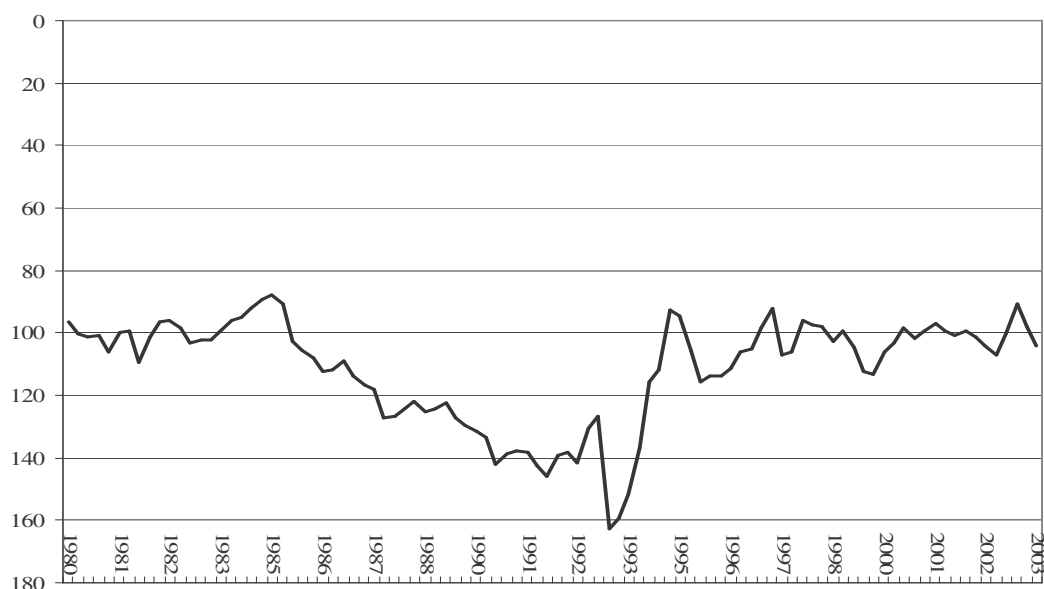
Figure 10 presents an index that shows the *real value* of the Kenyan shilling over the same time period. The difference between this data series and the series in Figure 9 showing the *nominal* value of the shilling is that, with this *real* value series, we control for relative changes in inflation rate between Kenya and its major trading partners.¹⁵ The real value of the shilling begins to fall in the mid-1980s, indicating a real depreciation of the shilling. The sharp devaluation of the shilling that the Kenyan Central Bank undertook just prior to liberalization is also evident in Figure 10. However, as the graph also shows, the effects of this devaluation were short-lived. After the exchange rate liberalization, the fact (as we saw in Figure 9) that the nominal exchange rate no longer responded as strongly to domestic price increases meant that the real value of the shilling remained high relative to the values of the pound, dollar and mark.

This is the background for considering whether the shilling is in fact overvalued at present, even though its value is mainly determined by market forces. This is a difficult question to answer. There are many ways to assess the degree of exchange rate misalignment. For this study, we have built models based on two alternative techniques that are frequently used in the professional literature, a “price parity” approach and a single-equation econometric technique. We present both of our models in Appendix 2. For the discussion here, we simply summarize the main findings of these models.

Our overall conclusion from both models is that the shilling is indeed overvalued. In Figure 11, we present our estimate of the extent of this overvaluation, as generated by the single-equation econometric technique. As we can see in Figure 11, according to our estimate, a sharp level of overvaluation occurred soon after the financial markets adjusted to the liberalization and the one-time devaluation of the shilling in 1994. The overvaluation spikes in 1995 at 21

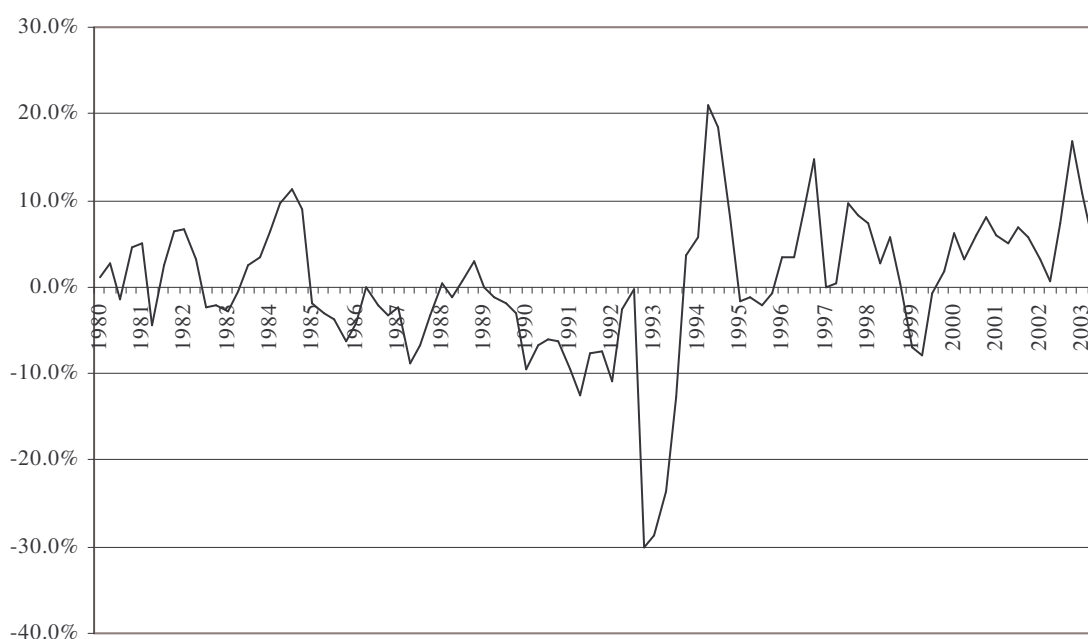
percent. After 1995, the extent of overvaluation fluctuates sharply through 2003, including a brief period in 2000 when, according to our estimate, the shilling is actually undervalued. By the end of 2003, we estimate that the shilling is about eight percent overvalued.

FIGURE 10

Real exchange rate index, 1980-2003, Kenya (1980=100)

Source: See appendix.

FIGURE 11

Estimate of extent of overvaluation (percent), Kenya, 1981-2003

Source: See appendix.

REAL EXCHANGE RATE APPRECIATION AND LIBERALIZATION: CONTRIBUTING FACTORS

What factors have contributed to the overvaluation of the shilling since 1995? Why might the nominal exchange rate have failed to depreciate when domestic prices rose after liberalization, leading to an appreciation of the real exchange rate? There are a number of possibilities.

1. *Liberalization of cross-border financial flows combined with low inflation targets.* This may produce overvalued exchange rates if high real interest rates are the primary means of controlling inflation. This is because the high real interest rates will attract financial investors to purchase bonds denominated in shillings, given the prospects of high returns on these bonds. But to buy these bonds, investors first have to purchase shillings. This would drive up the value of the shilling, all else equal.
2. *Inflation resulting from supply-side shocks.* As we have already discussed, inflationary pressures in Kenya often result from supply-side shocks that rapidly drive up the prices, in particular, of energy, food and transportation. Such supply-side shocks increase the pressures for the shilling to remain overvalued. This is because the supply-side shocks lead to a rapid increase in inflation. However, the inflation is not likely to produce an equivalent depreciation in the shilling. This is because high interest rates maintain support for the value of the shilling despite the rise in inflation. Correspondingly, any short-run fall in the real interest rate that might occur due to a rapid spike in supply-shock inflation does not necessarily lead to a significant reduction in the real exchange rate. This is because purchasers of shilling-denominated bonds may calculate that the spike in inflation will not be sustained at that high level and therefore would not have a permanent impact on the value of their investment.
3. *Factors leading to increased financial inflows.* There is evidence that factors beyond the high nominal interest rates are contributing to maintaining the overvalued shilling. These factors include the possibility that remittance flows into the country have grown substantially. This would drive up the value of the shilling, all else equal, since Kenyans living abroad that send money back home have to sell the euros, pounds, dollars, or other currencies that they earn abroad, and buy shillings in exchange. This increases the demand for shillings, pushing up its relative price. Unfortunately, remittances are not documented within the balance of payments account, making it difficult to confirm whether or not this effect is large in magnitude. But in combination with any impact from remittances, Kenya has also emerged as a financial center within East Africa, providing a stable institutional environment lacking in some of the region's countries that have experienced higher levels of conflict (e.g., Sudan, Somalia, Burundi, and Rwanda). Here again, this could increase the demand for shillings, independent of the interest rates available on shilling-denominated bonds.
4. *Global commodity price boom.* Since Kenya is a major exporter of primary tea and coffee, and other commodities to a lesser extent, higher commodity prices could raise export revenues and strengthen the nominal exchange rate relative to domestic prices. Our formal econometric model, discussed below, offers some evidence that higher global commodity prices have contributed to a rise in export revenues that could support an appreciated exchange rate.

We have already discussed policy interventions that can serve to counteract the pressures for real exchange rate appreciation. In particular:

1. The lower interest-rate environment and more relaxed inflation targets that we propose will reduce the attractiveness for financial market speculators to favor the shilling; and
2. Improved control over supply-shock inflation will reduce the possibility for imbalances in the relative movements of Kenya's inflation rate and the value of the shilling.

THE DETERMINANTS OF KENYAN EXPORTS AND IMPORTS

The real exchange rate represents the relative price of tradables to non-tradables. Therefore, a depreciation of the Kenyan shilling would generally benefit the country's tradable sectors—export-producing sectors and sectors competing with foreign imports. A depreciation would make Kenya's exports cheaper in foreign markets and its imports more expensive within the domestic Kenyan economy. However, other variables also affect import and export performance, including income growth in foreign markets, fluctuations in the relative terms of trade between Kenya and its trading partners, domestic income growth, and trade, industrial, and agricultural policies. Therefore, it is important to assess the responsiveness of imports and exports to movements in the real exchange rate along with these other possible influences in order to determine the potential impact of an overvalued shilling.

To address these concerns, we have constructed another formal econometric model to estimate the effects on imports and exports of changes in Kenya's real exchange rate. As with the exchange rate overvaluation model above, we present our full formal model in Appendix 2. We provide a brief summary of the main findings here.

Beginning with the analysis of exports, our model finds that real depreciation of the shilling is associated with higher export earnings. Increases in the world prices of major commodities (in this case, coffee and tea) also raise export earnings, suggesting that demand for these commodities is fairly price inelastic—that is, to some significant extent, foreign customers will generally keep purchasing Kenyan tea and coffee even when the prices of these commodities rise. We find that increases in the real incomes of Kenya's primary trading partners is positive, meaning that Kenya's trading partners, such as the U.K. and the U.S., will buy more Kenyan products when their national incomes rise. This effect is to be expected. But we also find that its impact is very weak (i.e., statistically insignificant). As such, Kenyan exports appear to respond strongly to price changes (i.e., the real exchange rate and global commodity prices), but more weakly to income growth in their primary markets.

The story with imports appears to be different. As expected, imports do go down when the shilling depreciates, since this means that it becomes more expensive for Kenyans to purchase imports relative to domestic substitutes. In addition, sharp increases in petroleum prices raise the overall value of imports. This means that when the price of imported oil goes up, Kenyans continue to buy virtually the same quantities of oil at the higher prices. At present, there are few substitutes in Kenya for oil as an energy source. However, these price effects have only a weak (i.e., statistically insignificant) effect on imports. On the other hand, we do find a strong positive effect on demand for imports when the incomes of Kenyans go up. Our findings indicate specifically that economic growth will be accompanied by an even larger growth rate for imports, all other factors remaining equal.

This apparent high level of import demand in Kenya raises concerns about the sustainability of faster economic growth in the country. Given the estimates presented here, a depreciated real exchange rate provides only a partial counterweight to import dependency. That is, exports do appear to respond favorably to a depreciated shilling. Import demand may also fall modestly when the shilling depreciates. However, this falling import demand linked to a shilling depreciation will most likely be small relative to income effects associated with faster growth—that is, faster income growth means even greater demand for imports in Kenya. The end result of this dynamic could very well be that faster income growth can mean that imports are growing faster than exports. This in turn will bring a growing trade deficit and eventual balance of payments problems.

In short, our econometric exercise has highlighted some basic structural factors behind Kenya's persistent trade deficits. These include the following:

1. As we have discussed above, Kenya is heavily dependent on imported oil as well as other capital goods and intermediate inputs, including chemicals, equipment and machinery. This is why, as our econometric findings show, imports do not fall significantly as a result of a shilling depreciation. Put another way, the Kenyan economy at present has only a limited capacity to produce domestic substitutes for many of the products they are now importing. As a long-term project, Kenya should aim to create domestic substitutes in capital goods and intermediate products. This should be one important aim of the subsidized credit program that we outline in our full study.
2. Kenya's purchases of luxury consumption goods also currently rises along with rising incomes. This also presents a problem of macroeconomic management, since, of course, the aim of economic policy is to raise incomes. However, under the current structural conditions, rising Kenyan income induces increases in imports, thereby diminishing the benefits for the economy of aggregate income growth. Such structural conditions are, of course, subject to change. In particular, to the degree that income growth in Kenya is focused on the country's poor majority, the increase in incomes will lead to a lesser corresponding rise in imports. The reason is that the proportion of imported goods purchased by the poor is less than that purchased by the middle class and wealthy. As such, an economic program, such as we propose to increase decent employment and reduce poverty, should serve to reduce this structural problem in Kenya's trade balance.
3. These two problems on the import side are partially offset by the fact that foreigners appear committed to purchasing Kenyan exports—tea and coffee—even if world prices for these goods rise. However, on balance, the benefits that Kenya accrues from weak price sensitivity of demand for its exports (i.e., price inelasticity of exports) do not compensate for the costs Kenya faces because its demand for imports is also relatively insensitive to price effects while it is strongly responsive to rising incomes.

Manipulating the real exchange rate can be an important tool for addressing Kenya's trade imbalance and related macroeconomic problems. At the same time, the structural

problems that are suggested by our results on import dependency and limited export diversification cannot be solved with exchange rate policy alone. Nevertheless, a new policy regime for managing the exchange rate will be an important complementary tool within an overall framework of policies aimed at promoting decent employment. These include the following:

1. A targeted exchange rate policy—such as the crawling peg that existed prior to 1993—is an important macroeconomic instrument for ensuring the competitiveness of Kenya’s exports. It could also provide an appropriate economic environment for diversifying Kenya’s export base. The Central Bank does have the capacity to implement a targeted peg policy, since the exchange rate can be manipulated through adjusting overnight interest rates as well as active interventions in currency markets.
2. Kenya should focus on developing regional trade within the African continent. Kenya remains a net exporter to the continent and should remain competitive in this region as long as the shilling does not become overvalued. Moreover, regional growth can have important positive feedback effects on the Kenyan economy.
3. Targeted interventions aimed at promoting industrial expansion are needed in order to generate employment that reduces poverty in a way that is sustainable in the long run. Here we introduce the role of subsidized credit policies to promote activities that can be competitive in export markets.

7 CONCLUSIONS AND POLICY RECOMMENDATIONS

Our analysis suggests that the current tools used to address the challenges that Kenya faces with regard to its monetary, exchange rate, and inflation-control policy objectives are inadequate. The ultimate goal of monetary policy should be to promote a macroeconomic environment that is both stable and supportive of economic growth, the expansion of decent employment, and the reduction in poverty. The current policy regime does not support this combination of objectives to the extent that could be achieved at present through implementing some changes in policy direction. Based on the foregoing discussion, we propose six basic changes in the conduct of monetary, exchange rate, and inflation-control policies in Kenya. In our full study, these recommendations will be presented within a fuller set of employment-targeted policy proposals. The recommendations are:

1. *Use a core short-term real interest rate as an intermediate monetary target.* The Central Bank of Kenya should move away from targeting the growth rates of monetary aggregates. The Bank has little direct control over monetary aggregates and the links between monetary growth and macroeconomic performance, as defined by the quantity theory of money, are too weak to form the basis of a development-oriented monetary policy. Targeting real interest rates will have a more direct influence in promoting private investment, economic growth and employment.

2. *Remove the anti-growth bias in monetary policy.* This involves a shift in the ways in which monetary policy is conducted. These shifts in policy should operate both to dampen cyclical downturns in the Kenyan economy and to promote a higher long-term growth trend. Specifically, monetary policy should be prepared to (1) provide economic stimulus during a contraction, i.e., counter-cyclical interventions; and (2) treat inflationary experiences differently depending on whether inflation is resulting from excess aggregate demand or a combination of supply shocks and inertia. This will help promote the economy's long-term growth trend.
3. *Diversify the toolkit for addressing inflation in Kenya.* Using monetary policy alone for controlling inflation will almost always entail high costs in terms of restraining output and employment growth, in Kenya and elsewhere. In Kenya, this is especially likely to be true when inflation emerges as the result of supply-side shocks and inertia. Responding to supply shocks by reducing the growth rates of monetary aggregates or pushing up short-term real interest rates is unlikely to be effective. Additional tools are needed to concurrently control inflation and support an employment-targeted economic program. We have discussed three additional measures in particular: 1) creating a large food buffer stock to counteract the effects of droughts and other sources of food price shocks; 2) increasing subsidies for public transportation to counteract the effects of global oil price shocks; and 3) establishing a set of egalitarian incomes policies, which can act, as they have in other developing country settings, as a counterweight to a build-up of inertial inflationary pressures. Over the longer term, lowering the costs of transportation will also reduce the overall share of transportation in the average Kenyan's consumption basket, and thereby, will dampen the impact of transportation-cost increases induced by a global oil price shock.
4. *Institute reforms to the financial sector to channel credit to socially productive uses.* The Kenyan banking sector has resources at its disposal that could be more effectively mobilized to facilitate the attainment of development objectives, such as creating employment, increasing productivity-enhancing investments, and supporting poverty reduction. However, at present, the financial structure fails to channel credit to many socially productive uses. A variety of interventions could be implemented to mobilize these resources more effectively: strengthen development banking, build linkages between commercial banks and less formal credit institutions (such as the SACCOs), and implement a credit guarantee scheme to lower risk premiums and channel resources towards priority activities.
5. *Maintain a competitive exchange rate.* Money market interventions that target short-run real interest rates should be supplemented with foreign exchange interventions that aim to maintain a competitive real exchange rate. Using these two policy tools together (instead of a single target, i.e., the growth rate of M3) will improve the effectiveness of monetary policy in securing growth along with macroeconomic stability. There is no guarantee that market-determined exchange rates will support an employment-targeted growth path and reduce structural imbalances. A managed exchange rate that incorporates market signals is a better approach.

6. *Implement complementary policies to address structural imbalances.* Kenya remains dependent on imported imports, particularly in terms of energy products, chemicals, equipment, and machinery. Imports appear to respond more strongly to domestic income effects than changes in exchange rates – contributing to the persistence of structural external imbalances. An alternative exchange rate policy is necessary, although not sufficient, for addressing this problem. As we have discussed above, complementary policies are needed to provide infrastructure and channel inexpensive and accessible credit to strategic activities that support a healthy balance between exports and imports. This involves integrating the objectives of monetary and exchange rate policies into other areas of the development agenda.

We want to stress again, finally, that these policies represent a subset of a more comprehensive development strategy that we present in our full study, *An Employment-Targeted Economic Program for Kenya*. The larger project includes detailed discussions of labor market policies, agricultural and rural employment, strategic growth sectors, informal activities, credit allocation and development finance, infrastructure development, and fiscal policies. At the same time, it will be clear in our fuller study that Kenya needs to develop effective alternative policies in the areas of monetary policy, inflation control and the exchange rate such as we outline here. Based on adopting a new policy framework in these crucial areas, Kenya will be able to create a substantially more conducive environment for promoting its ultimate economic policy objectives of accelerated economic growth, employment expansion and poverty reduction.

APPENDIX 1: SUPPLY SHOCK INFLATION

Sometimes a distinction is made between “headline inflation” (i.e., the rate of increase of the overall CPI) and “core inflation” (i.e., the rate of increase of the CPI excluding food and energy components). It is unclear that this distinction is useful in the Kenyan context. First, food and energy comprise a large fraction of the consumption basket of households in Kenya, particularly low-income households. After excluding these components, the remaining components of CPI may not give socially meaningful measurements of inflation. Second, shocks to food and energy prices may cause price increases for the other components of the CPI. Therefore, it is unclear that measures of “core inflation” actually remove the effects of food and energy prices.

It is useful to see how a shock to one component of the CPI affects other components. For example, how do food price shocks affect other prices in the economy? Are these effects transitory or long-lived?

We used a Vector Autoregression (VAR) model to examine how exogenous shocks to one component of the Kenyan Consumer Price Index (CPI) affects other prices in the economy. Price indices for ten expenditure categories were used: food, beverages and tobacco, clothing and footwear, housing, energy, household goods and services, medical goods and services, transportation, education and recreation, and personal goods and services. Monthly price data from January 1991 to December 2005 were included in the analysis. The Central Bureau of Statistics kindly supplied the relevant data.

The price indices of the 10 components are non-stationary. Therefore, the first differences of the log transformation of the components are used in the analysis.¹⁶ Sequential modified likelihood ratio tests suggest that a lag length of 11 months is appropriate for our VAR specification. We used the estimated VAR model to trace the impacts of an exogenous price shock of one of the CPI components on all the other CPI components. These “impulse responses” are calculated using generalized impulses over 24 months (2 years). Asymptotic standard errors are estimated for the impulse responses.

Figure A1.1 shows the impulse response analysis associated with a one-standard deviation shock to the rate of increase of food prices. Note that the responses to the initial impulse are cumulative responses over the 24 month period. To avoid clutter, only the responses of food, clothing, housing, energy, personal services, and transportation are shown.¹⁷ Interestingly, food price shocks appear to have few systematic effects on inflation rates in the rest of the economy. Even within the food sector itself, the cumulative impact of the shock on food price inflation dwindles significantly after two years. The only other sector that shows any significant response to an exogenous increase in food prices is the transportation sector. Food price shocks – a relevant issue given the recent drought – appear to be fairly transitory, with little systemic impact on inflationary dynamics in Kenya.

The picture is different if we consider energy price shocks. Figure A1.2 presents the response to a one-standard deviation shock to the rate of increase of energy prices. A once-off energy inflation shock raises the inflation rates of the other CPI components and these higher inflation rates are often sustained over time. Only food inflation and housing inflation appear to be transitory after 24 months, returning more or less to their initial levels prior to the energy shock.

FIGURE A1.1

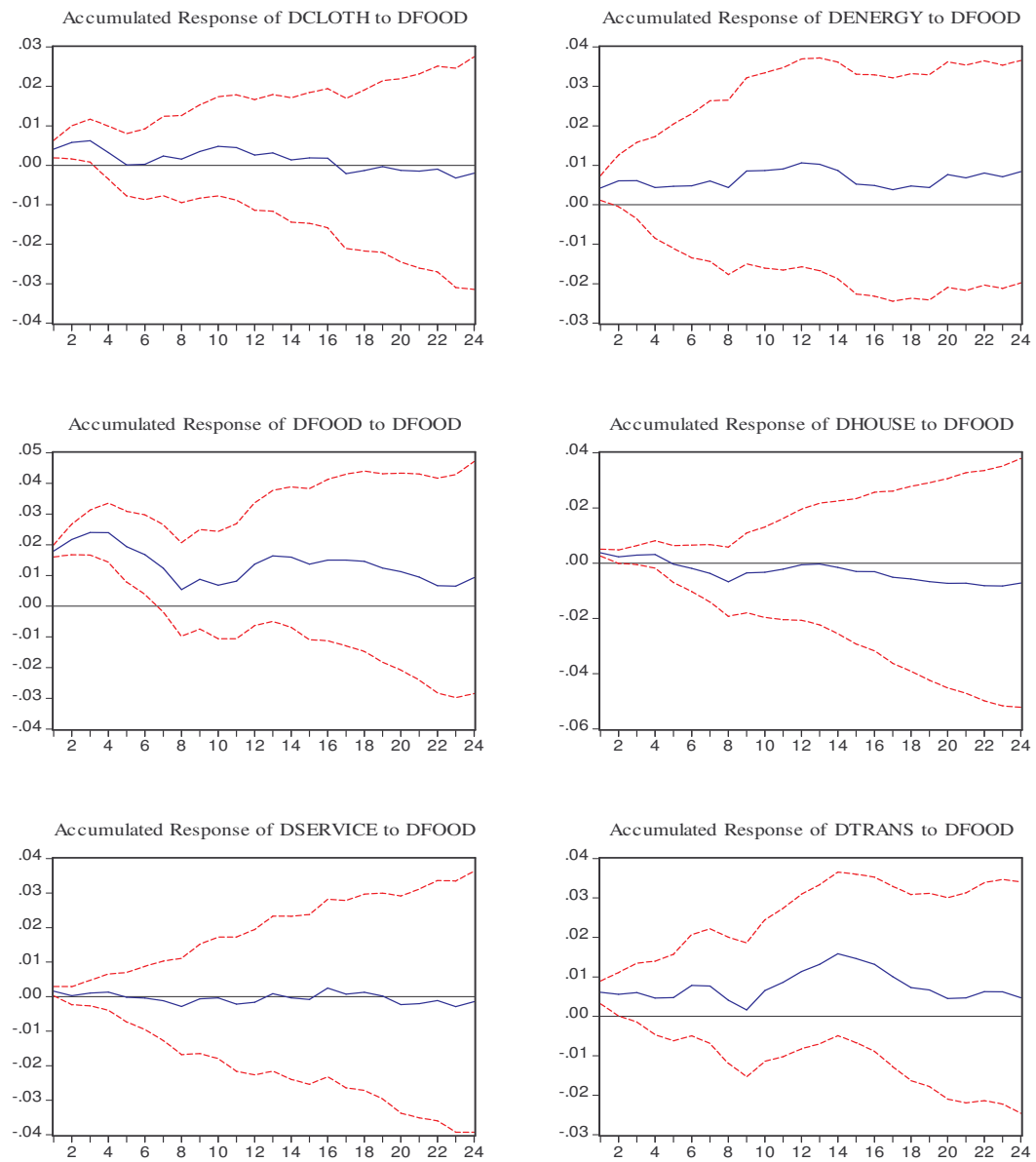
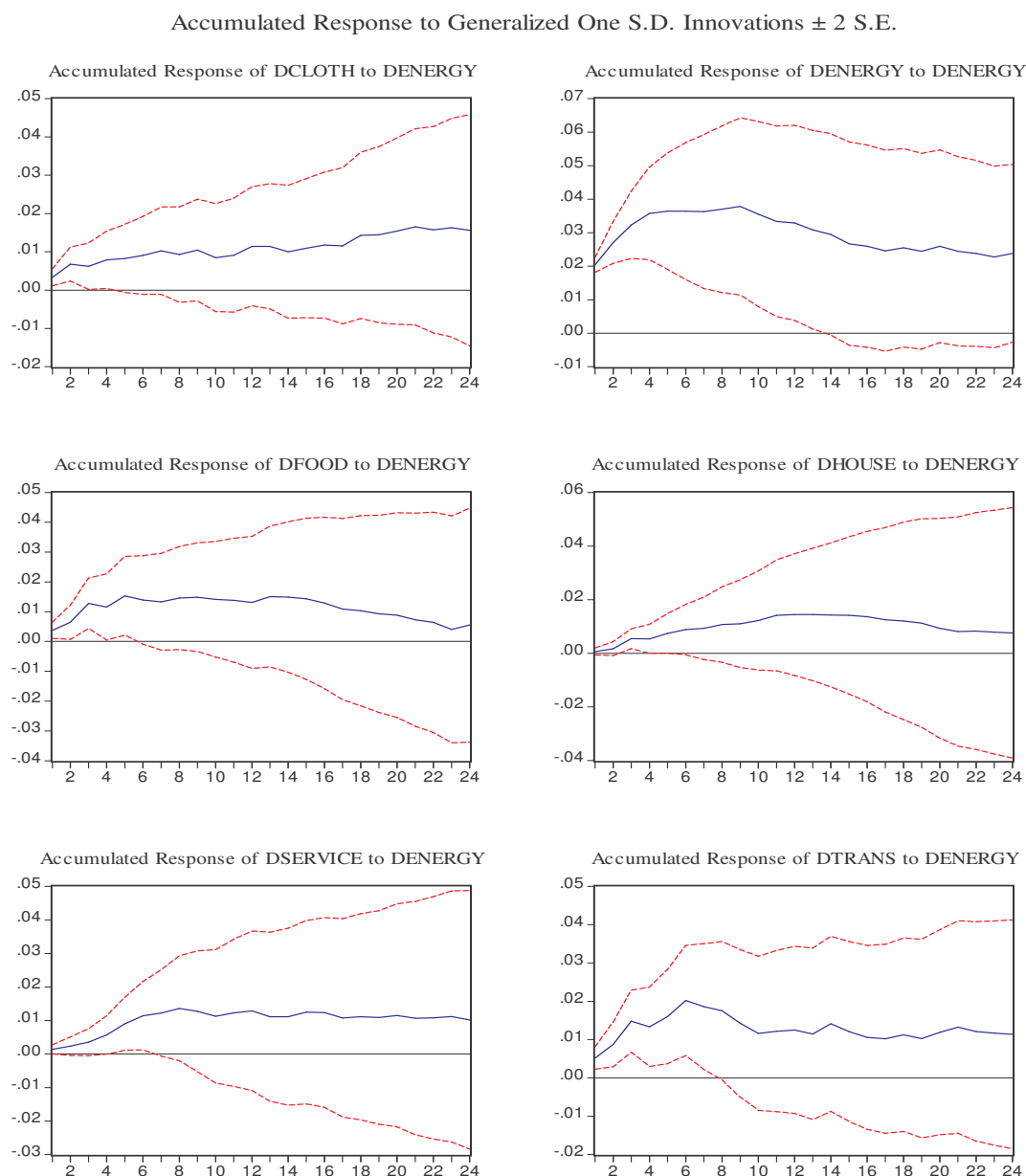
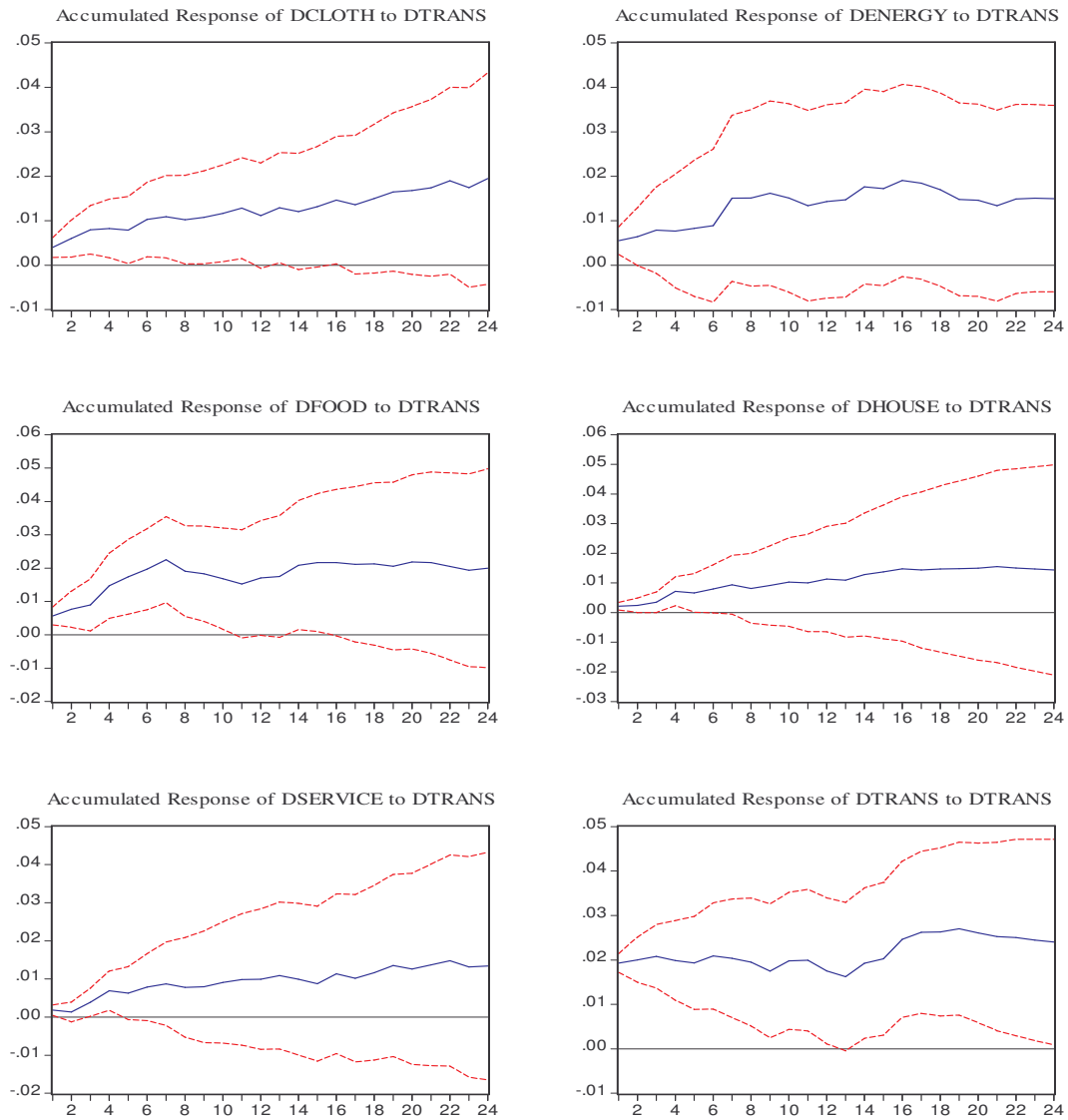
VAR Model: Responses to a One-Standard Deviation Shock to Food PricesAccumulated Response to Generalized One S.D. Innovations ± 2 S.E.

FIGURE A1.2

VAR Model: Responses to a One-Standard Deviation Shock to Energy Prices

In addition to food and energy prices, shocks to transportation costs have systemic effects on other prices in the Kenyan economy. Figure A1.3 illustrates the impact of a once-off, one standard deviation shock to the inflation rate of transportation costs. Note that the index of transportation prices includes both fuel and non-fuel components. A transportation price shock unleashes inflationary pressures throughout Kenya's economy. Not only does the once-off shock raise inflation rates of other components of the CPI; it also appears to lead to accelerating inflation, even after two years, in certain cases – e.g. clothing and services. This analysis suggests that lowering transportation costs will contribute to sustainable lower inflation rates over all.

FIGURE A1.3

VAR Model: Responses to a One-Standard Deviation Shock to Transportation PricesAccumulated Response to Generalized One S.D. Innovations ± 2 S.E.

From this analysis, it appears that although food price shocks have a direct impact on headline inflation in the short-run, they tend to be transitory with little or no long-run systemic effect. Energy price shocks do appear to have a more sustained, systemic impact on inflation in Kenya.

APPENDIX 2: EXCHANGE RATE MISALIGNMENT AND IMPORT AND EXPORT FUNCTIONS

ASSESSING EXCHANGE RATE MISALIGNMENT IN KENYA

We use two different methods for assessing the degree of potential exchange rate misalignment in Kenya: (1) the price parity approach and (2) econometric estimates of long-run exchange rate equilibria. Both methods have advantages and disadvantages. Therefore, it is useful to use both techniques and compare the results.

We begin with the price parity method for evaluating exchange rate misalignment. Price parity approaches compare domestic prices, expressed in foreign currencies, to the average foreign price level. If exchange rates adjust perfectly to eliminate price differentials, then the exchange rate can be said to be at the correct level. If foreign prices are high relative to domestic prices, the exchange rate may be undervalued. If, on the other hand, foreign prices are low relative to domestic prices, the exchange rate would tend to be overvalued.

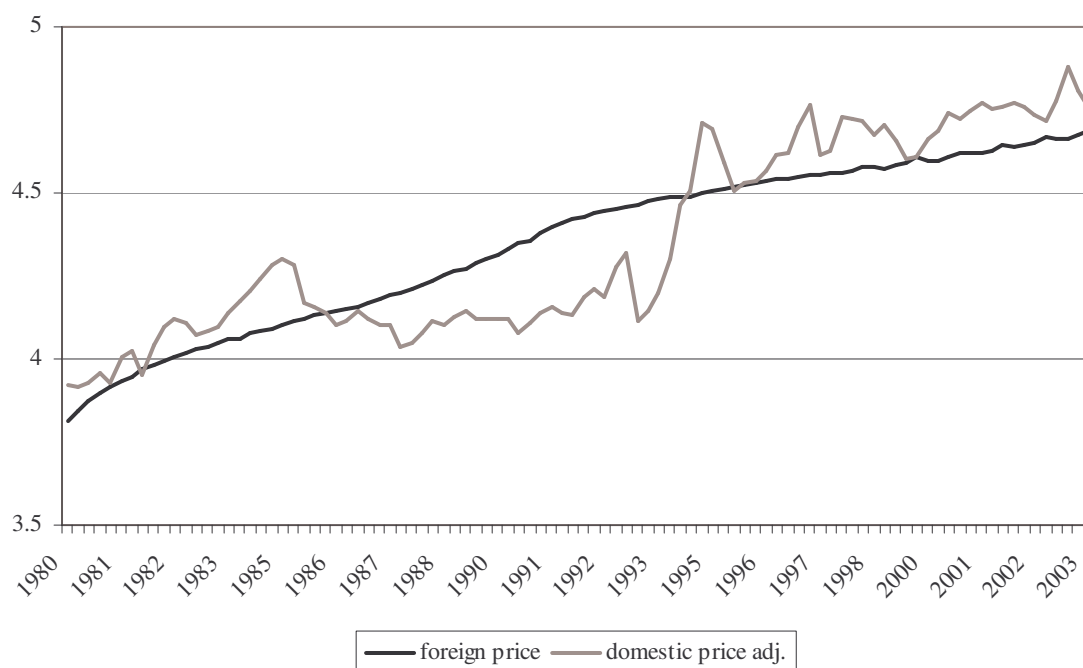
Figure A2.1 compares the natural logarithm of the foreign price level to that of domestic prices expressed in foreign currency. Trade weighted measures of foreign prices and the nominal exchange rate are used to compute the two series. The series are adjusted so that their means over the time period illustrated are identical. Figure A2.1 suggests that following liberalization, the shilling has become modestly overvalued. Interestingly, during the period in which exchange rates were managed, the exchange rate appears to have been more competitive. Since the means of the two series depicted in Figure A2.1 are the same, we are implicitly assuming that, on average over this period, the exchange rate was at its “correct” level. This assumption may not hold. However, if the exchange rate were overvalued on average throughout this period, then the extent of overvaluation post-liberalization would be more severe than is indicated in Figure A2.1.

The price parity comparison of foreign and domestic prices may not accurately represent the degree of exchange rate misalignment. This is because the price of non-tradables may increase at different rates in Kenya and in the country’s major trading partners. Specifically, Balassa (1964) suggests that faster rates of productivity growth may raise the price of non-tradables (largely through improvements in the real wage) and lead to a decline in the measured real exchange rate. When Balassa effects are present, observed real exchange rate appreciations may simply reflect productivity improvements and not an inappropriate exchange rate.

Figure A2.2 examines whether Balassa effects are a significant concern in Kenya. The graph shows changes in relative productivity between Kenya and a trade-weighted average of the productivity of its three largest trading partners. These productivity changes are compared with changes in the real exchange rate index, presented earlier. Real per capita income (PPP-adjusted) is used to proxy for productivity in the relevant countries.

FIGURE A2.1

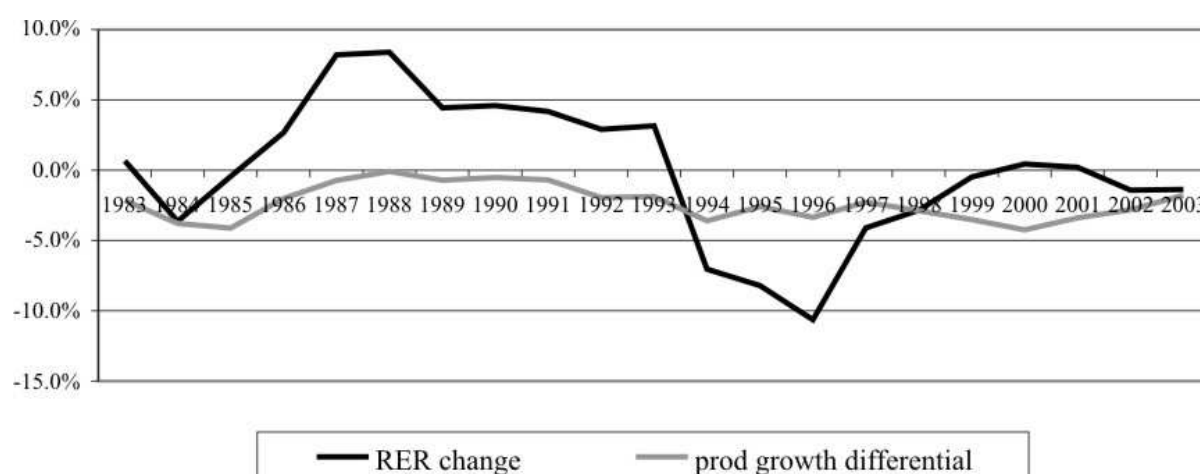
Average foreign price level and domestic prices in Kenya, adjusted by nominal exchange rate, 1980-2003



Source: Authors' calculations based on data from International Financial Statistics and Direction of Trade Statistics, IMF.

FIGURE A2.2

Changes in Kenya's Real Exchange Rate and Differences in Productivity Growth Between Kenya and Major Trading Partners, 1983-2003 (three year moving averages)



Source: Authors' calculations based on data from International Financial Statistics, Direction of Trade Statistics, and World Development Indicators 2006.

Figure A2.2 casts doubt on the existence of strong Balassa effects in Kenya. Throughout the period, Kenya's productivity growth lagged behind that of its major trading partners. If Balassa effects were operating in Kenya, this should have led to a relative decline in the price of

non-tradables and a depreciation of the real exchange rate. The real exchange rate did depreciate in the 1980s. However, the exchange rate shows a marked appreciation in the 1990s following liberalization, even though the productivity differential widens relative to the earlier period. If Balassa effects are present and strong in Kenya, this suggests that the real exchange rate has been even more overvalued in recent years than the price parity measure would suggest. However, it is likely that Balassa effects are relatively weak or even non-existent in Kenya – that is, wages and the price of non-tradables are not closely linked to productivity trends.

Improvements in labor productivity may have a positive effect on real exchange rates (i.e., lead to a depreciation) if higher productivity lowers unit labor costs and leads to lower prices for non-tradables relative to tradables. This is likely to happen when wages are not sensitive to changes in productivity, as appears to be the case in Kenya.

Price parity techniques provide one approach for evaluating the extent of misalignment. However, there are problems with these methods. Perhaps most significantly, the methodology assumes that the “correct” value of the real exchange rate does not change over time or, alternatively, follows a deterministic time trend (Chinn, 2005).¹⁸ An alternative way of measuring the degree of exchange rate misalignment is to specify and estimate the relationships between the long-run real exchange rate and its determinants. The degree of misalignment can then be measured as a deviation from this equilibrium level. This technique is often called single equation time series econometric estimation (see Edwards, 2001, for a more detailed discussion).

We develop such a model for Kenya. The variables typically identified as determinants of the long-run equilibrium real exchange rate include: interest rates (global and domestic), cross-border transfer payments, productivity growth, the terms of trade, and various policy variables, e.g., government spending, taxes and subsidies (Edwards, 1989). The model we develop for Kenya incorporates variables that represent these various influences. Price indices of coffee, tea, and petroleum are used to capture terms of trade effects. The measurement of productivity differentials with Kenya’s major trading partners has already been described. The real interest rate differential between 3-month t-bills in Kenya and the U.S. is used to assess differences in global and domestic interest rates. Net current transfers, normalized by GDP, are used to measure cross-border transfer payments. Finally, the fiscal balance as a percent of GDP, seasonally adjusted, enters as a policy variable. Table A2.1 presents a summary of the variables used.

TABLE A2.1

Description of variables

Variable name	Description
rer	Kenyan real exchange rate index (as described in the text)
coffee	Commodity price index, coffee, New York
tea	Commodity price index, tea, London
petrol	Commodity price index,
tbill gap	Differential between the real interest rates on U.S. and Kenyan 3-month treasury bills.
prod dif	Difference in the productivity growth rate between Kenya and its major trading partners (as described in the text).
budget	Budget surplus(+)/deficit(-) as a percent of GDP
transfer	Cross-border transfers as a percent of GDP

In single-equation time series models, the long-run equilibrium relationship between the real exchange rate and its determinants is estimated as a co-integrating relationship among the variables. Variables must be integrated of the same order if the existence of a co-integrating relationship is to be established. Unit root tests of the variables in Table A2.1 show that all variables are integrated of the first order with the sole exception of the budget surplus/deficit, which is stationary.¹⁹

Equation 1 of Table A2.2 presents OLS estimates of the cointegrating relationship between all the variables that are integrated of the first order.²⁰ A cointegrating relationship exists if a linear combination of the non-stationary variables is itself stationary. Unit root tests of the residuals from Equation 1 show no indication of a unit root. Therefore, the OLS coefficient estimates can be taken as estimates of the cointegrating relationship (i.e. the long-run equilibrium relationship). The coefficients on two of the variables, tea prices and current transfers, are not statistically significant. These variables are dropped from the estimation and Equation 2 of Table A2.2 presents the resulting estimates of the long-run cointegrating relationship.

TABLE A2.2

Estimates of the long-run cointegrating relationship between the real exchange rate and its determinants

Variable	Equation 1	Equation 2
rer_{t-1}	0.764 ($p < 0.001$)	0.785 ($p < 0.001$)
$coffee_t$	-0.018 (0.093)	-0.011 (0.135)
tea_t	-0.016 (0.700)	
$petrol_{t-1}$	-0.101 (0.004)	-0.098 (0.003)
$tbill\ gap_{t-1}$	-0.147 (0.015)	-0.164 (0.004)
$prod\ dif_t$	4.579 (0.001)	4.972 ($p < 0.001$)
$transfer_{t-1}$	-2.231 (0.334)	
Constant	44.206 ($p < 0.001$)	36.620 (4.860)
Adj. - R^2	0.87	0.87
Durbin-Watson	1.83	1.83
Dickey Fuller Unit Root test of residuals	-8.76 ($p < 0.001$)	-8.75 ($p < 0.001$)

Dependent variable: real exchange rate index, p-values in parentheses. Quarterly data, 1980-2003.

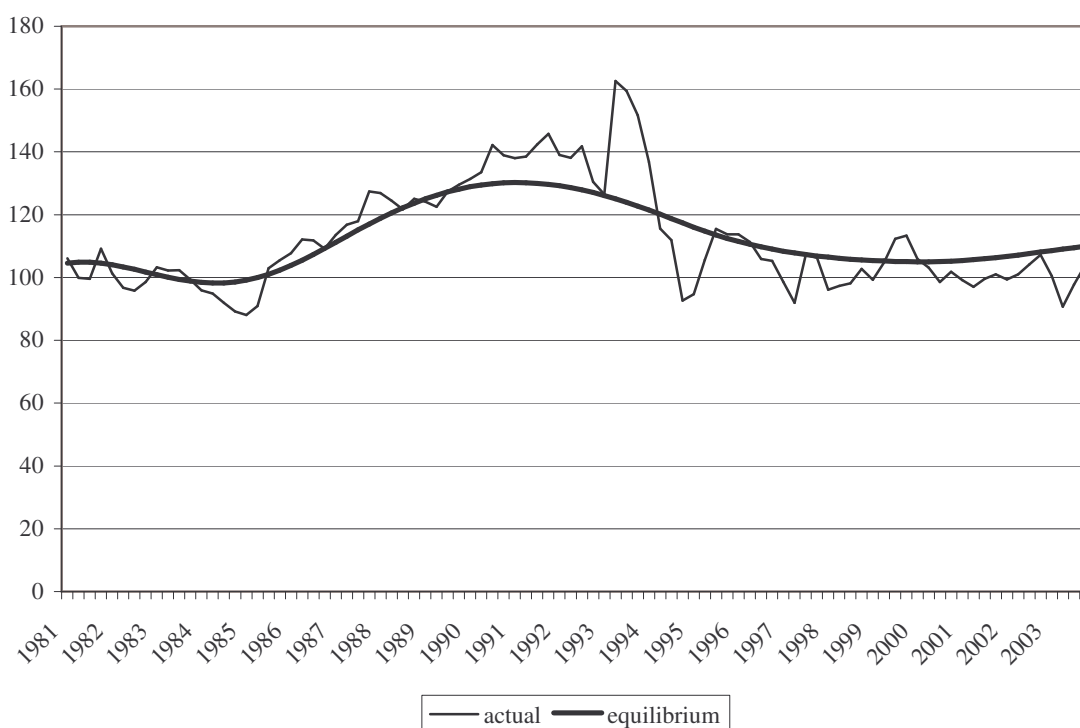
The coefficient on coffee prices is negative, but its statistical significance is marginal. Nevertheless, this suggests that substantial increases in coffee prices – a major export – may result in “Dutch disease” effects, causing an appreciation of the equilibrium real exchange rate. The coefficient on petroleum prices is also negative. Increases in petroleum raise the average price level and overall rates of inflation in Kenya. These inflationary pressures contribute to a real exchange rate appreciation.

The coefficient on the interest rate differential is negative, as expected. Higher domestic interest rates relative to foreign rates attract short-term capital inflows and lead to an appreciation of the shilling. Interestingly, the coefficient on the productivity differential is positive and highly significant. This suggests that, contrary to the predictions of Balassa (1964), higher rates of productivity growth in Kenya relative to its trading partners, improves competitiveness by reducing unit production costs (and, by implication, prices), leading to a depreciation of the real exchange rate.

To estimate the long-run equilibrium real exchange rate, we use the model estimated in Equation 2, Table A2.2. The independent variables included in the model are themselves subject to short-run shocks and fluctuations. Therefore, we use a Hodrik-Prescott filter to generate estimates of the long-run trends for each of the independent variables. We then use the estimated model to generate values for the equilibrium real exchange rate and compare them to the actual real exchange rate index. Both series are illustrated in Figure A2.3.

FIGURE A2.3

Actual real exchange rate index and estimates of the equilibrium real exchange rate, Kenya, 1981-2003



Source: See text.

The difference between the actual and equilibrium exchange rates gives us a measure of the extent of exchange rate misalignment. If the actual rate falls below the equilibrium level, the exchange rate is overvalued. If the actual rate lies above the equilibrium, it is undervalued. Therefore, subtracting the actual value from the equilibrium value, and expressing the difference as a percent of the equilibrium exchange rate gives us a measure of overvaluation (i.e., the higher the number, the greater the overvaluation). Figure 11 in the main text presented our estimate of the degree to which the Kenyan shilling is overvalued.

The single equation estimates of overvaluation look remarkably similar to the patterns of overvaluation indicated by the price parity technique. If we take the difference between the measure of domestic prices, adjusted by the nominal exchange rates, and the measure of foreign prices generated by the price parity analysis as an indicator of overvaluation, the correlation coefficient between the two estimates of overvaluation is 0.84. The fact that two very different approaches to measuring the degree of misalignment produce very similar estimates reinforces our confidence in the analysis of exchange rate dynamics in Kenya.

Many of the observations made with regard to the price parity analysis hold true for the single-equation estimates of overvaluation. That is, when exchange rates were managed by a crawling peg regime, the actual exchange rate remained at a more competitive level (i.e., closer to its equilibrium value) when compared to the post-liberalization period. This conclusion is reinforced by the observation that the large nominal devaluation, prior to liberalization, produced only a temporary real devaluation. The real exchange rate returned quickly to its earlier levels, suggesting that the real exchange rate was more or less in equilibrium prior to the devaluation.

TRADE AND EXCHANGE RATE MODEL

In order to better understand the determinants of Kenyan imports and exports, we estimated an export function and an import function for the economy as a whole. The specifications of these functions follow standard economic theory. The export function is given by:

$$x_t = \alpha_0 + \alpha_1 x_{t-1} + \alpha_2 \varepsilon_t + \alpha_3 p_t^x + \alpha_4 y_t^f + \mu_t$$

in which ε represents the real exchange rate, p^x the price of major export commodities, y^f aggregate income in Kenya's major trading partners over the period examined (U.K., U.S., and Germany), and μ is a stochastic error term. The import function is:

$$m_t = \beta_0 + \beta_1 m_{t-1} + \beta_2 \varepsilon_t + \beta_3 p_t^m + \beta_4 y_t^k + \omega_t$$

in which ε is the real exchange rate, p^m the price of major imported commodities, y^k aggregate income in Kenya, and ω represents the stochastic error term for the import function.

Commodity prices of coffee and tea are included as the major export prices and world petroleum prices are used as the primary imported commodity. Real gross national income in Kenya's three largest trading partners is used to measure Kenya's potential export market. Similarly, Kenya's gross domestic product is used to indicate domestic national income. Exports and imports are measured by their dollar value as reported in the IMF's *Direction of Trade Statistics* database.

Several of the variables possess unit roots. Therefore, the variables are transformed and first differences of the natural logarithms are used in the estimations. In addition, a dummy variable is added to the model to control for the pre- and post-liberalization period (using the fourth quarter of 1993 as the reference point). The functions are estimated with quarterly data from 1980 to 2003.

Table A2.3a presents estimates of coefficients on the export function and Table A2.3b contains Wald coefficient tests to determine whether the sums of the coefficients on the contemporaneous and lagged variables are statistically significant. Therefore, the estimates in Table A2.3b represent short-run export elasticities.

TABLE A2.3A

Coefficient estimates, export function (p-values in parentheses)

Variables	Coefficient
X_{t-1}	-0.280 (0.008)
ε_t	0.252 (0.132)
ε_{t-1}	0.219 (0.190)
p_t^{coffee}	0.206 (0.009)
p_{t-1}^{coffee}	0.083 (0.303)
p_t^{tea}	0.079 (0.309)
p_{t-1}^{tea}	0.143 (0.070)
y_t^f	1.337 (0.346)
y_{t-1}^f	0.557 (0.696)
d_t	0.026 (0.188)
Constant	-0.008 (0.658)
Adj.- R^2	0.202

TABLE A2.3B

Wald test, coefficient sums (p-values in parentheses)

Variable	Elasticity
E	0.470 (0.039)
p^{coffee}	0.290 (0.002)
p^{tea}	0.222 (0.043)
y^f	1.893 (0.232)

Along similar lines, Table A2.4a presents estimates of coefficients on the import function and Table A2.4b contains Wald coefficient tests to determine whether the sums of the coefficients on the contemporaneous and lagged variables are statistically significant.

TABLE A2.4A

Coefficient estimates, import function (p-values in parentheses)

Variables	Coefficient
m_{t-1}	-0.196 (0.050)
ε_t	-0.209 (0.225)
ε_{t-1}	-0.153 (0.381)
p_t^{petrol}	-0.097 (0.198)
p_{t-1}^{petrol}	0.173 (0.024)
y_t^k	2.137 (0.002)
y_{t-1}^k	-0.613 (0.390)
d_t	0.014 (0.498)
Constant	-0.008 (0.565)
Adj.- R^2	0.184

TABLE A2.4B

Wald test, coefficient sums (p-values in parentheses)

Variable	Elasticity
E	-0.362 (0.122)
p^{petrol}	0.076 (0.445)
y^k	1.523 (0.028)

REFERENCES

- Aryeetey, Ernest (2001). *Strengthening Ghana's Financial Market: an Integrated and Functional Approach*. Legon: ISSER (University of Ghana).
- Balassa, Bela (1964). "The purchasing power parity doctrine: a reappraisal," *Journal of Political Economy* 72: 584-96.
- Bigsten, Arne (2002). "The history and policy of manufacturing in Kenya," in *Structure and Performance of Manufacturing in Kenya*, A. Bigsten and P. Kimuyu, eds., New York: Palgrave, pp.7-30.
- Bruno, Michael (1993). *Crisis, Stabilization, and Economic Reform: Therapy by Consensus*, Oxford: Clarendon Press.
- Bruno, Michael (1995). "Does Inflation Really Lower Growth?" *Finance and Development*, September, pp. 35 – 38.
- Bruno, Michael and Easterly, William (1998). "Inflation Crises and Long-Run Growth," *Journal of Monetary Economics*, 41, pp. 3 – 26.
- Burdekin, Richard C.K., Denzau, Arthur T., Keil, Manfred W., Sitthiyot, Thititthep, and Willett, Thomas D. (2004). "When Does Inflation Hurt Economic Growth? Different Nonlinearities for Different Economies," *Journal of Macroeconomics*, 26, pp. 519 – 32.
- Calmfors, Lars (1993). "Centralization of Wage Bargaining and Macroeconomic Performance," *OECD Economic Studies*, No. 21, Winter, pp. 161-91.
- Campbell, John and Vuolteenaho, Tuomo (2004). "Inflation Illusion and Stock Prices," Cambridge, MA: National Bureau of Economic Research Working Paper 10263, <http://www.nber.org/papers/w10263.pdf>
- Central Bank of Kenya (2005). *Statistical Bulletin 2005*.
- Central Bank of Kenya (various years). *Annual Report*.
- Central Bureau of Statistics (1999) *Labour Force Survey 1998 Database*, Ministry of Planning, Nairobi.
- Chinn, Menzie (2005). "A primer on real effective exchange rates: determinants, overvaluation, trade flows, and competitive devaluation," NBER Working Paper 11521, Cambridge, MA: National Bureau of Economic Research.
- Cottani, Joaquin, Cavallo, Domingo, and M. Khan (1990). "Real exchange rate behavior and economic performance in LDCs," *Economic Development and Cultural Change* 39 (October): 61-76.
- Dollar, David (1992). "Outward-oriented developing economies really do grow more rapidly: evidence from 95 LDCs, 1976-1985," *Economic Development and Cultural Change* 40: 523-44.
- Dornbusch, Rudiger and Fischer, Stanley (1991). "Moderate Inflation," National Bureau of Economic Research Working Paper #3896.
- Easterly, William (2001). "The lost decades: developing countries' stagnation in spite of policy reform, 1980-98," *Journal of Economic Growth*, 6(2): 135-57.

- Edwards, Sebastian (2001). "Exchange rate regimes, capital flows, and crisis prevention," NBER Working Paper 8529, Cambridge, MA: National Bureau of Economic Research.
- Edwards, Sebastian (1989). "Exchange rate misalignment in developing countries," *World Bank Research Observer* 4(1): 3-21.
- Flanigan, Robert J. (1999). "Macroeconomic Performance and Collective Bargaining: An International Perspective," *Journal of Economic Literature*, September 1999, 1150-1175.
- Frenkel, Roberto and Taylor, Lance (2005). "Real exchange rate, monetary policy, and employment: economic development in a garden of forking paths." Paper presented at the conference Alternatives to Inflation Targeting Monetary Policy for Stable and Egalitarian Growth in Developing Countries, CEDES, Buenos Aires, May 13-15, 2005.
- Gala, Paulo and Lucinda, Claudio (2006). "Exchange rate misalignment and growth: old and new econometric evidence," Mimeo. São Paulo School of Business Administration and São Paulo School of Economics.
- Ghosh, Atish and Phillips, Steven (1998). "Warning: Inflation May Be Harmful to Your Growth," *IMF Staff Papers*, 45 (4), pp. 672-86.
- Ghura, Dhaneshwar and Grennes, Thomas (1993). "The real exchange rate and macroeconomic performance in sub-Saharan Africa," *Journal of Development Economics*, 42: 155-74.
- Government of Kenya (2003). *Economic Recovery Strategy for Wealth and Employment Creation*, Ministry of Planning, Nairobi.
- Iversen, T., Jonas Pontusson, Jonas, and Soskice, David, eds., (2000). *Unions, Employers, and Central Banks*, Cambridge 2000.
- Jenkins, Rhys (2005). "Globalisation of production, employment, and poverty: three macro-meso-micro studies," *European Journal of Development Research*, 17(4): 601-25.
- Khan, Mohsin S. and Senhadji, Abdelhak S. (2001). "Threshold Effects in the Relationship Between Inflation and Growth," *IMF Staff Papers*, 48:1, 1 – 21.
- Manda, D.K. and Sen, K. (2004). "The labour market effects of globalization in Kenya," *Journal of International Development*, 16(1): 29-44.
- Marshall, Mike (1994). "Lessons from the Experience of the Swedish Model," in P. Arestis and M. Marshall eds., *The Political Economy of Full Employment*, Ch. 10.
- Modigliani, Franco and Cohn, Richard (1979). "Inflation, Rational Valuation and the Market," *Financial Analysts Journal* XXXV, 24-44.
- Nam, Sang-woo (1984). "Korea's Stabilization Efforts since the Late 1970s," *Korea Development Institute Working Paper* 8405 (March).
- Ndung'u, Njuguna (2000). "The exchange rate and monetary policy in Kenya," *African Development Review*, 12(1): 24-51.
- Ndung'u, Njuguna and Ngugi, Rose (1999). "Adjustment and liberalization in Kenya: the financial and foreign exchange markets," *Journal of International Development*, 11: 465-91.
- Ngugi, Rose W. (2001). "An Empirical Analysis of Interest Rate Spread in Kenya," *AERC Research Paper* 106, African Economic Research Consortium, Nairobi, May.

Ngugi, Rose (2000). "Financial Reform Process in Kenya" *African Development Review/Revue Africaine de Développement* 12(1): 52-77.

Nissanke, Machiko and Aryeetey, Ernest (1998). *Financial Integration and Development: Liberalization and Reform in sub-Saharan Africa*. London and New York: Routledge.

Pekkarinen, P., Pohjola, M. and Rowthorn, R. (1992). *Social Corporatism: A Superior Economic System?* New York : Oxford University Press.

Pollin, Robert and Schaberg, Marc (1998). "Asset Exchanges, Financial Market Trading, and the M1 Income Velocity Puzzle," *Journal of Post Keynesian Economics*, 135-62.

Pollin, Robert and Zhu, Andong (2006). "Inflation and Economic Growth: A Cross-Country Non-linear Analysis," *Journal of Post Keynesian Economics*, Summer 2006, pp. 593-614.

Rama, Martin (2001). "The consequences of doubling the minimum wage: The case of Indonesia" *Industrial and Labor Relations Review* 54(4): 864-881.

Reinhart, Carmen M. and Tokatlidis, Ioannis (2003). "Financial Liberalisation: the African Experience," *Journal of African Economies* 12(Supplement 1): 53-88.

Wagacha, Mbui (2003). "Analysis of liberalization and economic growth in Kenya," in *Restarting and Sustaining Economic Growth and Development in Africa*, M. Kimenyi, J.M. Mbaku, and N. Mwaniki, eds., Aldershot, UK and Burlington, VT: Ashgate, pp. 147-90.

World Bank (2005) *World Development Indicators*, Washington DC: World Bank.

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NOTES

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2. These other potential influences include 1) the initial level of GDP; 2) the share of investment spending in GDP; 3) the share of government spending in GDP; 4) the fiscal deficit; 5) the level of overall health, as measured by life expectancy; 6) the international economic environment; 7) the effects of natural disasters; and 8) the effects of wars.

3. From our discussions with policymakers at the Central Bank of Kenya, it seems clear that they are aware of these tensions. They do not appear to believe that it is necessary to tighten monetary policy in response to food or oil price shocks.

4. The discussion of the CPI in this memo is based on the 1997 revision of the Kenyan Consumer Price Index. Note that we are referring here to the "New Kenya CPI," and are reporting here on the "Broad Category Weights for All Kenya". The New CPI breaks down the "All Kenya" consumer basket by areas of the country and income groupings—specifically into lower income and middle/upper income groups for Nairobi, which then are aggregated into an all Nairobi category; and a "rest of Kenya" grouping.

5. Fischer is the former Director of Research at the IMF and currently Governor of the Bank of Israel.

6. Previously, this definition of M3 applied to M3X. Under the older definitions, M3 excluded foreign currency deposits and M2 excluded deposits in non-bank financial institutions. Under the new definitions, the new M3 corresponds to the old M3X and the new M2 corresponds to the old M3.

7. Because of issues of data availability, the older definitions of the money supply are used. That is, M1 includes currency outside of the banking sector and demand deposits. M2 includes M1 plus savings deposits and CDs. M3 includes M2 plus deposits of non-bank financial institutions.

8. Note that the gap between M2 and M3 narrows significantly over this period. The gap represents deposits of non-bank financial institutions. Due to regulatory reforms, many non-bank financial institutions (which were previously able to avoid some of the regulations of the banking sector) were transformed into banks. This change, pure regulatory, would have caused M2 to increase faster than M3, closing the gap between the two series.

9. See Pollin and Shaberg (1998) for a discussion of this pattern as it affected the U.S. economy.

10. The shilling was fixed relative to the dollar until 1974. Balance of payments crises in the early 1970s led to devaluations of the shilling, after which the shilling was fixed relative to SDRs.

11. Easterly (2001) questions whether overvalued real exchange rates help to explain the poor growth performance of many developing countries during the so-called "lost decades" of the 1980s and 1990s.

12. Kenya's most important trading partners were determined by looking at each country's share of the sum of Kenya's exports and imports. The countries with the largest shares on average over the period in question were determined to be Kenya's most significant trading partners. In the analysis presented here, those countries were the U.K., the U.S. and Germany.

13. Exchange rates with the U.K., the U.S. and Germany over the period 1980-2003 were used to construct the index. Shares of total trade volume (the value of exports plus imports) were used to measure the relative importance of trading partners. Data were taken from the IMF's International Financial Statistics (IFS) and Direction of Trade Statistics (DOTS). See Appendix 2 for a more detailed discussion of the context for this analysis.

14. The correlation coefficient between the nominal exchange rate index and the CPI is -0.99 from the first quarter of 1980 to the third quarter of 1993 – prior to the introduction of a floating exchange rate. From the fourth quarter of 1993 to the fourth quarter of 2003, the correlation between the two series drops to -0.82. This is clearly still a strong association, but it also indicates a growing tendency for the nominal exchange rate and the average price level to diverge after liberalization.

15. GDP deflators for the U.K., the U.S., and Germany were used to estimate changes in the foreign price level. The domestic CPI was used to measure changes in the Kenyan average price level. Data were taken from the IMF's International Financial Statistics (IFS) and Direction of Trade Statistics (DOTS).

16. The first difference of the log transformed variables corresponds to the percent change of these variables – or the inflation rates of the individual components of the CPI.

17. The impulse responses of other components of the Kenyan CPI do not differ significantly from those featured in Figures A1.1-A1.3.

18. In the price parity assessment of misalignment presented here, the implicit assumption is that the equilibrium exchange rate does not change over time and does not follow a deterministic trend. Unit root tests suggest that such an assumption is only partly true: the Kenyan real exchange rate series developed for this analysis does not follow a deterministic time trend but it is also non-stationary.

19. Augmented Dickey-Fuller tests were used to determine whether the variables are stationary or non-stationary (i.e., whether the series has a unit root or not). The hypothesis that a unit root exists could not be rejected, at the one percent level, for all the variables examined here except for the budget deficit as a percent of GDP. The first differences of the variables, however, showed no indication of possessing a unit root (at a significance level of one percent). Therefore, these variables are integrated of the first order.

20. In all cases, the lagged dependent variable (rer_{t-1}) is included as a regressor. Estimates of the model with both contemporaneous independent variables and independent variables lagged one period were generated (not shown). The lag structure in Table A2.2 was generated by retaining those variables with the greatest statistical significance.



International Poverty Centre

SBS – Ed. BNDES, 10º andar
70076 900 Brasília DF
Brazil

povertycentre@undp-povertycentre.org
www.undp-povertycentre.org
Telephone +55 61 2105 5000
Fax +55 61 2105 5001